

	Type	L #	Hits	Search Text	DBs
1	IS&R	L1	1	("6923939").PN.	USPAT
2	BRS	L2	0	("6923939").URPN.	USPAT
3	BRS	L3	452272	screen\$9	USPAT
4	BRS	L4	1610	3 and semipermeable near8 membrane	USPAT
5	BRS	L5	11899	screen\$9 with array	USPAT
6	BRS	L6	35	4 and 5	USPAT
7	BRS	L7	2	heat near8 activ\$9 with selective near8 membrane	USPAT
8	BRS	L8	3	heat with activ\$9 with selective near8 membrane	USPAT
9	BRS	L9	721834	screen\$9	US- PGPUB; USPAT
10	BRS	L10	20612	screen\$9 with array	US- PGPUB; USPAT
11	BRS	L12	1	10 and heat with activ\$9 with selective near8 membrane	USPAT
12	BRS	L13	0	10 and semipermeable near8 selective near8 membrane	US- PGPUB; USPAT
13	BRS	L14	0	10 and semipermeable with selective with membrane	US- PGPUB; USPAT
14	BRS	L15	2	10 and semipermeable same selective same membrane	US- PGPUB; USPAT
15	BRS	L11	119	10 and semipermeable near8 membrane	US- PGPUB; USPAT
16	BRS	L16	7	11 and mass near8 spectrometer	US- PGPUB; USPAT
17	BRS	L17	15	11 and mass near8 (spectrometer or spectroscopy)	US- PGPUB; USPAT
18	BRS	L18	15	mass near8 (spectrometer or spectroscopy) same semipermeable near8 membrane	US- PGPUB; USPAT

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PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

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NEWS 3 FEB 27 New STN AnaVist pricing effective March 1, 2006
NEWS 4 APR 04 STN AnaVist \$500 visualization usage credit offered
NEWS 5 MAY 10 CA/CAplus enhanced with 1900-1906 U.S. patent records
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NEWS 7 MAY 19 Derwent World Patents Index to be reloaded and enhanced
NEWS 8 MAY 30 IPC 8 Rolled-up Core codes added to CA/CAplus and
USPATFULL/USPAT2
NEWS 9 MAY 30 The F-Term thesaurus is now available in CA/CAplus
NEWS 10 JUN 02 The first reclassification of IPC codes now complete in
INPADOC
NEWS 11 JUN 26 TULSA/TULSA2 reloaded and enhanced with new search and
and display fields
NEWS 12 JUN 28 Price changes in full-text patent databases EPFULL and PCTFULL
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NEWS 14 JUL 14 FSTA enhanced with Japanese patents
NEWS 15 JUL 19 Coverage of Research Disclosure reinstated in DWPI
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FILE 'HOME' ENTERED AT 12:07:38 ON 20 AUG 2006

```
=> file caplus inspec compendex
```

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FILE 'CAPLUS' ENTERED AT 12:07:55 ON 20 AUG 2006
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=> s screen? (s) array
L1 6314 SCREEN? (S) ARRAY

=> s l1 and mass (8a) (spectrometer or spectroscopy)
L2 64 L1 AND MASS (8A) (SPECTROMETER OR SPECTROSCOPY)

=> s l1 and semipermeable (8w) membrane
L3 2 L1 AND SEMIPERMEABLE (8W) MEMBRANE

=> s l2 and semipermeable (8w) membrane
L4 0 L2 AND SEMIPERMEABLE (8W) MEMBRANE

=> s l2 and heat activated selective membrane
L5 0 L2 AND HEAT ACTIVATED SELECTIVE MEMBRANE

=> s l1 and heat activated selective membrane
L6 0 L1 AND HEAT ACTIVATED SELECTIVE MEMBRANE

=> s heat activated selective membrane
L7 0 HEAT ACTIVATED SELECTIVE MEMBRANE

=> s l2 and selective (8w) semipermeable (8w) membrane
L8 0 L2 AND SELECTIVE (8W) SEMIPERMEABLE (8W) MEMBRANE

=> s l1 and selective (8w) semipermeable (8w) membrane
L9 0 L1 AND SELECTIVE (8W) SEMIPERMEABLE (8W) MEMBRANE

=> s l1 and selective (s) semipermeable (s) membrane
L10 0 L1 AND SELECTIVE (S) SEMIPERMEABLE (S) MEMBRANE

=> s l1 and semipermeable (s) membrane
L11 2 L1 AND SEMIPERMEABLE (S) MEMBRANE

=> s catalyst (8w) screen?
L12 1573 CATALYST (8W) SCREEN?

=> s l12 and l2
L13 11 L12 AND L2

=> s l13 and semipermeable (8w) membrane
L14 0 L13 AND SEMIPERMEABLE (8W) MEMBRANE

=> s l13 and membrane
L15 2 L13 AND MEMBRANE

=> s l1 and membrane
L16 329 L1 AND MEMBRANE

```
=> s l12 and membrane
L17      47 L12 AND MEMBRANE

=> s l12 and membrane (s) (isolat? or separat? or filter? or fract? or pur?)
L18      7 L12 AND MEMBRANE (S) (ISOLAT? OR SEPARAT? OR FILTER? OR FRACT?
OR PUR?)
```

=> remove duplicate

DUPLICATE IS NOT VALID HERE

The DELETE command is used to remove various items stored by the system.

To delete a saved query, saved answer set, saved L-number list, SDI request, batch request, mailing list, or user-defined cluster, format, or search field, enter the name. The name may include ? for left, right, or simultaneous left and right truncation.

Examples:

DELETE BIO?/Q	- delete query names starting with BIO
DELETE ?DRUG/A	- delete answer set names ending with DRUG
DELETE ?ELEC?/L	- delete L-number lists containing ELEC
DELETE ANTICOAG/S	- delete SDI request
DELETE ENZYME/B	- delete batch request
DELETE .MYCLUSTER	- delete user-defined cluster
DELETE .MYFORMAT	- delete user-defined display format
DELETE .MYFIELD	- delete user-defined search field
DELETE NAMELIST MYLIST	- delete mailing list

To delete an ordered document or an offline print, enter its number.

Examples:

DELETE P123001C	- delete print request
DELETE D134002C	- delete document order request

To delete an individual L-number or range of L-numbers, enter the L-number or L-number range. You may also enter DELETE LAST followed by a number, n, to delete the last n L-numbers. RENUMBER or NORENUMBER may also be explicitly specified to override the value of SET RENUMBER.

Examples:

DELETE L21	- delete a single L-number
DELETE L3-L6	- delete a range of L-numbers
DELETE LAST 4	- delete the last 4 L-numbers
DELETE L33-	- delete L33 and any higher L-number
DELETE -L55	- delete L55 and any lower L-number
DELETE L2-L6 RENUMBER	- delete a range of L-numbers and renumber remaining L-numbers
DELETE RENUMBER	- renumber L-numbers after deletion of intermediate L-numbers

Entire sets of saved items, SDI requests, batch requests, user-defined items, or E-numbers can be deleted.

Examples:

```
DELETE SAVED/Q - delete all saved queries
```

```
DELETE SAVED/A - delete all saved answer sets
DELETE SAVED/L - delete all saved L-number lists
DELETE SAVED - delete all saved queries, answer sets,
    and L-number lists
DELETE SAVED/S - delete all SDI requests
DELETE SAVED/B - delete all batch requests
DELETE CLUSTER - delete all user-defined clusters
DELETE FORMAT - delete all user-defined display formats
DELETE FIELD - delete all user-defined search fields
DELETE SELECT - delete all E-numbers
DELETE HISTORY - delete all L-numbers and restart the
    session at L1
```

To delete an entire multifile SDI request, enter DELETE and the name of the request. To delete a component from the multifile SDI, enter DELETE and the name of the component.

```
=> duplicate remove
ENTER L# LIST OR (END):12
DUPLICATE PREFERENCE IS 'CPLUS, INSPEC, COMPENDEX'
KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):n
PROCESSING COMPLETED FOR L2
L19      53 DUPLICATE REMOVE L2 (11 DUPLICATES REMOVED)
```

```
=> duplicate remove
ENTER L# LIST OR (END):117
DUPLICATE PREFERENCE IS 'CPLUS, INSPEC, COMPENDEX'
KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):n
PROCESSING COMPLETED FOR L17
L20      42 DUPLICATE REMOVE L17 (5 DUPLICATES REMOVED)
```

```
=> display 119 1-19 ibib abs
```

```
L19 ANSWER 1 OF 53 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2006(32):115 COMPENDEX
TITLE: Multiplexed rectilinear ion trap mass
spectrometer for high-throughput analysis.
AUTHOR: Tabert, Amy M. (Department of Chemistry Purdue
University, West Lafayette, IN 47907-2084, United
States); Goodwin, Michael P.; Duncan, Jason S.; Fico,
Charles D.; Cooks, R. Graham
SOURCE: Analytical Chemistry v 78 n 14 Jul 15 2006.p
4830-4838
CODEN: ANCHAM ISSN: 0003-2700
PUBLICATION YEAR: 2006
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2006(32):115 COMPENDEX
AB A multichannel mass spectrometer based on the
rectilinear ion trap (RIT) analyzer was designed and constructed for
simultaneous high-throughput analysis of multiple samples. The instrument
features four parallel ion source/mass analyzer/detector channels
assembled in a single vacuum chamber and operated using a common set of
control electronics, including a single rf amplifier and transformer coil.
This multiplexed RIT mass spectrometer employs an
array of four millimeter-sized ion traps ( $x_0 = 5.0$  mm and  $y_0 = 4.0$ 
mm, where  $x_0$  and  $y_0$  are the half-distances in the x and y dimensions,
respectively). Mass spectra are acquired from four different samples
simultaneously. The available mass/charge range is  $m/z$  15-510 with
excellent linearity of the mass calibration ( $R^2 = 0.999\ 999$ ). The peak
width is less than 0.3 mass/charge units at  $m/z$  146, corresponding to a
```

resolution of [similar to]500. Simultaneous MS/MS of ions due to four compounds (3-fluoroanisole, 4-fluoroanisole, 2-fluorobenzyl alcohol, 2,6-dimethylcyclohexanone) with the same nominal molecular radical cation but distinctive fragmentation patterns was demonstrated. Isolation and fragmentation efficiencies were [similar to]25 and [similar to]75%, respectively, measured in the typical case of the molecular radical cation of acetophenone. Preacquisition differential data were obtained by real-time subtraction of the ion signals from two channels of the multiplexed mass spectrometer. The differential experiment presented offers proof of principle of comparative mass spectra in high-throughput screening applications while reducing data storage requirements. ©CPY 2006 American Chemical Society. 30 Refs.

L19 ANSWER 2 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:426764 CAPLUS
DOCUMENT NUMBER: 145:140288
TITLE: Genomics and proteomic approaches in comparative biochemistry and physiology
AUTHOR(S): Storey, Kenneth B.
CORPORATE SOURCE: Institute of Biochemistry, College of Natural Sciences, Carleton University, Ottawa, ON, K1S 5B6, Can.
SOURCE: Physiological and Biochemical Zoology (2006), 79(2), 324-332
PUBLISHER: University of Chicago Press
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. Emerging technologies in genomics (e.g., cDNA library screening, DNA arrays), proteomics (e.g., 2-dimensional gel electrophoresis and mass-spectroscopy fingerprinting), and metabolic regulation (e.g., elucidating protein-protein binding assocns. or signal transduction pathways) offer powerful tools for comparative biochem. that will greatly increase the understanding of how animals adapt to environmental stress. The power of these new technologies and their potential application for physiol. and ecophysiol. research are illustrated with examples of recent advances in key fields. These include hypoxia/anoxia-responsive gene expression, the actions and regulation of the hypoxia-inducible transcription factor, the central role of the AMP-dependent kinase in mediating cellular responses to changing energy status, mammalian target of rapamycin (mTOR) mediation of nutrient signals in the control of protein synthesis and growth, proteomics approaches to identifying the physiol. substrates of protein kinases, and the interactions of biochem. and physiol. in determining a net organismal response to high hematocrit values stimulated by erythropoietin. In particular, gene- and protein-screening technologies will drive a fundamental shift in the way that environmental stress effects on metabolism are evaluated by providing a holistic overview of the responses of a huge range of cell functions to stress and allowing researchers to identify multiple new areas of metabolic response that contribute to biochem. and physiol. adaptation.
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 3 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:249474 CAPLUS
TITLE: Nano-catalyst screening for heterogeneous reactions using an array of microreactors
AUTHOR(S): Mehta, Shirish; Zhao, Shihuai; Cao, Wei; Fang, Ji; Seetala, Naidu V.; Kuila, D.
CORPORATE SOURCE: Institute for Micromanufacturing, Louisiana Tech University, Ruston, LA, 71272, USA

SOURCE: Abstracts of Papers, 231st ACS National Meeting, Atlanta, GA, United States, March 26-30, 2006 (2006), PETR-076. American Chemical Society: Washington, D. C.

CODEN: 69HYEC

DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)

LANGUAGE: English

AB In this study, we present the application of microreactors for screening and development of nano-catalysts for various heterogeneous chemical reactions. Based on our experience of single microreactor system, an array of microreactors has been developed. This system is automated with help of Labview which controls the pressure, temperature and flow rates of reactants. The product stream is analyzed by a mass spectrometer and a gas chromatograph coupled with TCD and FID simultaneously. Currently, Fe, Co, Ru and mixture of these three catalysts supported on a silica sol gel matrix in silicon microreactor are screened and compared for Fischer Tropsch (F-T) Synthesis. These catalysts are characterized by SEM (SEM), Energy Dispersive X-Ray (EDX) and Vibrating Sample Magnetometer (VSM). BET and BJH methods are used to measure the surface area and the pore size of these catalysts resp. The effect of reaction temperature, pressure, CO/H₂ feed ratio and total flow rate on the F-T reaction for different catalysts will be discussed.

L19 ANSWER 4 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:107027 CAPLUS

DOCUMENT NUMBER: 144:288747

TITLE: Application of surface-enhanced laser desorption/ionization time-of-flight-based serum proteomic array technique for the early diagnosis of prostate cancer

AUTHOR(S): Pan, Yu-Zhuo; Xiao, Xue-Yuan; Zhao, Dan; Zhang, Ling; Ji, Guo-Yi; Li, Yang; Yang, Bao-Xue; He, Da-Cheng; Zhao, Xue-Jian

CORPORATE SOURCE: Research Center of Prostate Diseases, Department of Reproductive Pathophysiology, School of Basic Medicine, Jilin University, Changchun, 130021, Peop. Rep. China

SOURCE: Asian Journal of Andrology (2006), 8(1), 45-51

CODEN: ASJAF8; ISSN: 1008-682X

PUBLISHER: Blackwell Publishing Asia Pty Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Aim: To identify the serum biomarkers of prostate cancer (PCa) by protein chip and bioinformatics. Methods: Serum samples from 83 PCa patients and 95 healthy men were taken from a mass screening in Changchun, China. Protein profiling was carried out using surface-enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI-TOF MS). The data of spectra were analyzed using two bioinformatics tools. Results: Eighteen serum differential proteins were identified in the PCa group compared with the control group ($P < 0.01$). There were four proteins at the higher serum level and 14 proteins at the lower serum level in the PCa group. A decision tree classification algorithm that used an eight-protein mass pattern was developed to correctly classify the samples. A sensitivity of 92.0% and a specificity of 96.7% for the study group were obtained by comparing the PCa and control groups. Conclusion: We identified new serum biomarkers of PCa. SELDI-TOF MS coupled with a decision tree classification algorithm will provide a highly accurate and innovative approach for the early diagnosis of PCa.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 5 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1004966 CAPLUS
 DOCUMENT NUMBER: 143:263130
 TITLE: Computational analysis of mass spectroscopic lipidomic arrays
 INVENTOR(S): Brown, H. Alex; Forrester, Jeffrey
 PATENT ASSIGNEE(S): Vanderbilt University, USA
 SOURCE: PCT Int. Appl., 58 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005085838	A2	20050915	WO 2005-US6843	20050302
WO 2005085838	A3	20060119		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, US RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: US 2004-549483P P 20040302
 AB The present invention provides methods for developing a lipid profile from cells using a computational statistical anal. of a lipid data array derived from mass spectroscopy. The methods have particular utility in diagnosing disease, screening drugs, and identifying new lipids and lipid-linked pathways.

L19 ANSWER 6 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:284041 CAPLUS
 DOCUMENT NUMBER: 142:351750
 TITLE: High throughput or capillary-based screening for a bioactivity or biomolecule and identification and enrichment of a polynucleotide encoding an activity of interest
 INVENTOR(S): Keller, Martin
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 96 pp., Cont.-in-part of U.S. Ser. No. 145,281.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 48
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005070005	A1	20050331	US 2003-626477	20030723
US 2003215798	A1	20031120	US 1997-876276	19970616
US 6174673	B1	20010116	US 1998-98206	19980616
US 6972183	B1	20051206	US 1999-444112	19991122
AU 2000048933	A5	20001005	AU 2000-48933	20000731
AU 756201	B2	20030109		
US 2002086279	A1	20020704	US 2001-875412	20010606
US 6677115	B2	20040113		

US 2003049841	A1	20030313	US 2001-975036	20011010
AU 2002035649	A5	20020613	AU 2002-35649	20020424
AU 777815	B2	20041104		
US 2003077677	A1	20030424	US 2002-145281	20020513
AU 2003200812	A2	20030501	AU 2003-200812	20030305
US 2004241759	A1	20041202	US 2003-688057	20031017
WO 2005010169	A2	20050203	WO 2004-US23883	20040723
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2005201125	A1	20050407	AU 2005-201125	20050315
AU 2005202312	A1	20050623	AU 2005-202312	20050527
AU 2005203018	A1	20050804	AU 2005-203018	20050711
PRIORITY APPLN. INFO.:				
US 1997-876276 A2 19970616				
US 1998-98206 A2 19980616				
US 1999-444112 A2 19991122				
US 2000-685432 A3 20001010				
US 2001-975036 A2 20011010				
US 2002-145281 A2 20020513				
US 2002-399272P P 20020726				
AU 1997-11489 A3 19961206				
US 1997-988224 A1 19971210				
AU 1998-81502 A3 19980616				
AU 2000-34839 A3 20000204				
AU 2000-40394 A3 20000327				
AU 2000-48933 A3 20000731				
US 2000-687219 A2 20001012				
US 2001-790321 A2 20010221				
US 2001-894956 A2 20010627				
US 2001-309101P P 20010731				
AU 2002-45900 A3 20020611				
US 2003-626477 A2 20030723				

AB The invention provides methods for isolating and maintaining a cell from a mixed population of uncultivated cells comprising encapsulating in a microenvironment at least a single cell from the mixed population; placing the encapsulated cell in a growth column; and incubating the encapsulated cell in the growth column under conditions allowing the encapsulated cell to survive and be maintained, thereby isolating and maintaining the cell. The growth column is a capillary or capillary array. The invention also provides methods for identifying and enriching for a polynucleotide encoding an activity of interest. Marine microbes from sea samples were filtered, resuspended in seawater, and encapsulated into CelMix and CelGel porous gel microdroplets (GMDs). Each GMD encapsulated 1-4 cells. The encapsulated cells were sorted and placed into chromatog. columns that allowed the flow of culture media and waste products. The GMD colonies were sorted into cell types and gene sequences and phylogenetic analyses were made.

L19 ANSWER 7 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:1033658 CAPLUS

DOCUMENT NUMBER: 142:151204

TITLE: High-throughput mass spectrometer
using atmospheric pressure ionization and a
cylindrical ion trap array

AUTHOR(S): Misharin, Alexander S.; Laughlin, Brian C.; Vilkov, Andrey; Takats, Zoltan; Ouyang, Zheng; Cooks, R. Graham

CORPORATE SOURCE: Department of Chemistry, Purdue University, West Lafayette, IN, 47907-2084, USA

SOURCE: Analytical Chemistry (2005), 77(2), 459-470

CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The anal. performance of an atmospheric pressure sampling, multiple-channel, high-throughput mass spectrometer was investigated using samples of a variety of types. The instrument, based on an array of cylindrical ion traps, was built with four independent channels and here is operated using two fully multiplexed channels (sources, ion optics, ion traps, detectors) capable of analyzing different samples simultaneously. Both channels of the instrument were incorporated within the same vacuum system and operated using a common set of control electronics. A multichannel electrospray ionization source was assembled and used to introduce samples including solns. of organic compds., peptides, and proteins simultaneously into the instrument in a high-throughput fashion. Cross-talk between the channels of the instrument occurred in the detection system and could be minimized to 1-2% using shielding between detector channels. In this initial implementation of the instrumentation, an upper mass/charge limit of .apprx.1300 Th was observed (+13 charge state of myoglobin) and unit mass/charge resolution was achieved to .apprx.800 Th. The rather limited dynamic range (2-3 orders of magnitude for low-concentration analytes) is due to cross-talk contributions from more concentrated species introduced into a different channel. Anal. of mixts. of alkylamines and peptides is demonstrated, but anal. of mixts. with a wide spread in mass/charge ratios was not possible due to mass discrimination in the ion optics. Further refinement of the vacuum system and ion optics will allow the addition of more channels of parallel mass anal. and facilitate applications in fields such as proteomics and metabolomics.

REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 8 OF 53 COMPENDEX COPYRIGHT 2006 EEI on STN

ACCESSION NUMBER: 2006(3):4622 COMPENDEX

TITLE: A 21st century HPLC workflow for process R&D.

AUTHOR: Karcher, Brent D. (Pharmaceutical Research Institute Bristol-Myers Squibb, New Brunswick, NJ 08903, United States); Davies, Merrill L.; Delaney, Edward J.; Venit, John J.

SOURCE: JALA - Journal of the Association for Laboratory Automation v 10 n 6 December 2005 2005.p 381-393

CODEN: JALLFO ISSN: 1535-5535 E-ISSN: 1540-2452

PUBLICATION YEAR: 2005

DOCUMENT TYPE: Journal

TREATMENT CODE: Experimental

LANGUAGE: English

AN 2006(3):4622 COMPENDEX

AB A unique high-performance liquid chromatographic (HPLC) workflow specifically designed for the rigors of process development has been developed. A key feature of the workflow is the creation of an HPLC software-hardware platform designed to automatically and systematically screen samples using a matrix of columns and eluents to aggressively search for impurities. The workflow platform was assembled from commercial hardware components and both custom and commercial HPLC software. The platform can be used to challenge existing HPLC methods or to develop new methods. The screening conditions are complementary to each other, and are useful to assess the complexity of a

sample and to chromatographically resolve impurities that may coelute using any single method. The workflow has been designed to support several different modes of HPLC, and can be used with absorption detection, photodiode array spectrometers, evaporative light scattering (ELS) devices, and mass spectrometric (MS) detection. The custom software interface contains a data-viewing feature to simplify analysis of results. The platform is designed to be used by process scientists, and the same simple user-interface is used to control analytical HPLC, LC-MS, and preparative HPLC. Three real world examples are provided to illustrate the utility of the platform to rigorously assess the complexity of samples and to develop new and improved HPLC methods. Copyright ©CPY 2005 by The Association for Laboratory Automation. 10 Refs.

L19 ANSWER 9 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:213363 CAPLUS

DOCUMENT NUMBER: 142:243275

TITLE: Combinatorial methods for the discovery of novel catalysts for the WGS reaction

AUTHOR(S): Brooks, Christopher J.; Pigos, John; Hagemeyer, Alfred; Yaccato, Karin; Carhart, Ray; Herrmann, Michael; Lesik, Andreas; Strasser, Peter; Wolpe, Anthony; Turner, Howard; Weinberg, Henry

CORPORATE SOURCE: Honda Research Institute, Columbus, OH, 43212, USA

SOURCE: Preprints - American Chemical Society, Division of Petroleum Chemistry (2005), 50(2), 140-142

CODEN: ACPCAT; ISSN: 0569-3799

PUBLISHER: American Chemical Society, Division of Petroleum Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Current state-of-art water gas shift catalysts (FeCr for high temperature shift and CuZn for low temperature shift) are not active enough for use in fuel processors for the production of hydrogen from gasoline for fuel cells for power generators in vehicles or stationary applications. The need to drastically lower catalyst vols. has triggered a search for novel WGS catalysts that are an order of magnitude more active than current systems; and moreover, are resistant to air and moisture during shut down. Novel catalytic materials for the high, medium and low temperature water gas shift reactions have been discovered by application of combinatorial methodologies. Catalyst libraries were synthesized on 4" wafers in 16x16 array format and screened in Symyx' high throughput scanning mass spectrometer in the temperature range of 200 °C to 350 °C. More than 200 wafers were screened under various conditions and more than 250,000 expts. conducted to comprehensively examine catalyst performance for various binary, ternary and higher-ordered compns. Promising compns. have been scaled up and optimized in a Celero 8x1 multi channel fixed bed reactor. The discovered compds. encompass supported noble metal systems with base metal components (V, Mo, and Co). Examples of discovered WGS catalysts that operate in the temperature regime of apprx. 200°C-350°C are Pt, the binaries Pt-CeReCoVMoNaK, the ternaries Pt-CeReCoMoVFe-Na and Pt-CoMoVFe-K, supported on zirconia, ceria and titania carriers. A noble metal free example of discovered WGS catalysts that operates in the temperature regime of apprx. 250°C-450°C is Ni-Mn-InSn, bulk or supported on zirconia.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 10 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:193061 CAPLUS

TITLE: Combinatorial methods for the discovery of novel

AUTHOR(S): catalysts for the WGS reaction
Brooks, Christopher J.; Hagemeyer, Alfred G.; Yaccato,
Karin; Carhart, Raymond; Herrmann, Michael; Lesik,
Andreas; Strasser, Peter; Volpe, Anthony F.; Turner,
Howard W.; Weinberg, Henry

CORPORATE SOURCE: Honda Research Institute, Columbus, OH, 43212, USA

SOURCE: Abstracts of Papers, 229th ACS National Meeting, San
Diego, CA, United States, March 13-17, 2005 (2005),
PETR-088. American Chemical Society: Washington, D.
C.

CODEN: 69GQMP

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB Current state-of-art water gas shift catalysts are not active enough for use in fuel processors for the production of hydrogen from gasoline for fuel cells for power generators in vehicles or stationary applications. Novel catalytic materials for the water gas shift reactions have been discovered by application of combinatorial methodologies. Catalyst libraries were synthesized on 4" wafers in 16x16 array format and screened in Symyx' high throughput scanning mass spectrometer in the temperature range of 200 °C to 350 °C. More than 200 wafers were screened under various conditions and more than 250,000 expts. conducted to comprehensively examine catalyst performance. Examples of discovered WGS catalysts that operate in the temperature regime of .apprx.200°C-350°C are the binaries Pt-CeReCoVMoNaK, the ternaries Pt-CeReCoMoVFe-Na and Pt-CoMoVFe-K, supported on zirconia, ceria and titania carriers. A noble metal free example of discovered WGS catalysts that operate in the temperature regime of .apprx.250°C-450°C is Pt-Mn-InSn, supported on zirconia.

L19 ANSWER 11 OF 53 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8649496 INSPEC
TITLE: Investigation of the interaction of active packaging material with food aroma compounds
AUTHOR: Strathmann, S.; Pastorelli, S.; Simoneau, C. (Eur. Comm. Joint Res. Centre, Ispra, Italy)
SOURCE: Sensors and Actuators B (Chemical) (29 April 2005), vol.106, no.1, p. 83-7, 29 refs.
CODEN: SABCEB, ISSN: 0925-4005
SICI: 0925-4005(20050429)106:1L.83:IIAP;1-3
Doc.No.: S0925-4005(04)00403-4
Published by: Elsevier, Switzerland

DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: Switzerland
LANGUAGE: English
AN 2005:8649496 INSPEC
AB The aim of the reported investigation was the determination of beneficial or adverse effects of active packaging material on aroma compounds in food. The effects of storage on the aroma of packaged food was characterized by a multi-sensor system or electronic nose (e-nose) in comparison to measurements with gas chromatography coupled to mass spectrometry (GC-MS) using different sample uptake techniques. For the measurements of aroma compounds static headspace extraction (HSS) and solid phase micro extraction (SPME) were used for sampling. For the monitoring of food ageing and the determination of shelf-life, the study focussed on off-flavours generated by lipid oxidation in fat containing foods during storage. Of special interest was the monitoring of hexanal, which can be used as a shelf-life indicator for many fatty foods. The effect of active packaging was assessed by the comparison of food and food simulants in contact with active packaging material in inert media or conventional packaging materials during storage under various

conditions. Active packaging proved to reduce oxidation and prolong shelf-life but also absorbed components from the headspace enclosed with the investigated model food. Within the study, the applicability of chemical sensor arrays for the screening of food and the assessment of shelf-life was evaluated. Hereby, measurement results obtained with the electronic nose could be correlated to the GC-MS data and therefore to the sample constituents. The evaluated electronic nose confirmed the possibility of use as a screening tool for the monitoring of ageing and quality of certain foods after careful calibration. [All rights reserved Elsevier]

L19 ANSWER 12 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2005:1229600 CAPLUS
DOCUMENT NUMBER: 144:24461
TITLE: Competitive CO and CO₂ methanation over supported noble metal catalysts in high throughput scanning mass spectrometer
AUTHOR(S): Yaccato, Karin; Carhart, Ray; Hagemeyer, Alfred; Lesik, Andreas; Strasser, Peter; Volpe, Anthony F.; Turner, Howard; Weinberg, Henry; Grasselli, Robert K.; Brooks, Chris
CORPORATE SOURCE: Symyx Technologies Inc., Santa Clara, CA, 95051, USA
SOURCE: Applied Catalysis, A: General (2005), 296(1), 30-48
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB High-throughput synthesis and screening methods have been developed for the heterogeneously catalyzed gas phase hydrogenation of CO and CO₂ ('methanation') over zirconia and ceria supported noble and base metal catalysts at 300-400 °C and ambient pressure. The discovery libraries, for primary screening, consisted of 11 + 11 arrays of 111 catalysts on 3 in. quartz wafers, and 16 + 16 arrays of 256 catalysts on 4 in. quartz wafers. Catalysts were prepared by liquid dispensing techniques and screened for catalytic activity in scanning mass spectrometers (SMS). This primary screening tool uses quadrupole mass spectrometry for rapid serial detection. More than 500 potential catalysts could be screened in a single day. A kinetic model based on fast equilibration by the reverse water-gas-shift reaction in parallel with about an order of magnitude slower CO hydrogenation is in good agreement with CO_x conversion data. CO₂ is mainly reverse shifted to CO. Ru, Rh, and Ni were found to promote methanation whereas Pt tends to catalyze the reverse WGS reaction. Methanation activity can be enhanced by some acidic and redox dopants or suppressed by basic dopants. High conversions were achieved in SMS demonstrating the minimal scalability risk for short contact time reactions.

REFERENCE COUNT: 67 THERE ARE 67 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 13 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:463437 CAPLUS
DOCUMENT NUMBER: 143:165619
TITLE: Nanoelectrospray ion generation for high-throughput mass spectrometry using a micromachined ultrasonic ejector array
AUTHOR(S): Aderogba, S.; Meacham, J. M.; Degertekin, F. L.; Fedorov, A. G.; Fernandez, F. M.
CORPORATE SOURCE: G. W. Woodruff School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, 30332, USA
SOURCE: Applied Physics Letters (2005), 86(20),

203110/1-203110/3
CODEN: APPLAB; ISSN: 0003-6951
American Institute of Physics

PUBLISHER:
DOCUMENT TYPE:
LANGUAGE:

Journal
English
AB Ultrasonic electrospray ionization (ESI) for high-throughput mass spectrometry is demonstrated using a silicon micromachined microarray. The device uses a micromachined ultrasonic atomizer operating in the 900 kHz-2.5 MHz range for droplet generation and a metal electrode in the fluid cavity for ionization. Since the atomization and ionization processes are separated, the ultrasonic ESI source shows the potential for operation at low voltages with a wide range of solvents in contrast with conventional capillary ESI technol. This is demonstrated using the ultrasonic ESI microarray to obtain the mass spectrum of a 10 μ M reserpine sample on a time of flight mass spectrometer with 197:1 signal-to-noise ratio at an ionization potential of 200 V.

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 14 OF 53 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2005(31):7788 COMPENDEX
TITLE: Fourier transform combinatorial chemistry applied to the discovery of novel catalysts for the water-gas-shift Reactions.
AUTHOR: Yaccato, Karin (Symyx Technologies Inc., Santa Clara, CA 95051, United States); Brooks, Christopher J.; Carhart, Ray; Hagemeyer, Alfred; Volpe, Anthony F.; Turner, Howard W.; Weinberg, W. Henry
MEETING TITLE: 2004 AIChE Annual Meeting.
MEETING LOCATION: Austin, TX, United States
SOURCE: AIChE Annual Meeting, Conference Proceedings 2004.p 10323-10331
SOURCE: 2004 AIChE Annual Meeting, Conference Proceedings
PUBLICATION YEAR: 2004
MEETING NUMBER: 65271
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English

AN 2005(31):7788 COMPENDEX

AB High-throughput synthesis and screening methods have been developed for the discovery of families of high activity water-gas-shift (WGS) catalysts. The discovery libraries, for primary screening, consisted of 16*16 arrays of 256 catalysts on 4" quartz wafers. Catalysts were prepared by robotic liquid dispensing techniques and screened for catalytic activity in Symyx' Scanning Mass Spectrometer in the temperature range of 200deg C to 450deg C. The ScanMS is a fast serial screening tool that uses flat wafer catalyst surfaces, local laser heating, a scanning/sniffing nozzle and a quadrupolar mass spectrometer to compare relative catalytic activities. The feed consisted of CO, CO2, H2, H2O with Kr as internal standard in Ar carrier gas. More than 250,000 experiments were conducted to comprehensively examine catalyst performance for various binary, ternary and higher-ordered compositions. The discovered lead compounds encompass supported noble metal systems as well as non-noble metal compositions. Linear grid search strategies as well as modulation techniques using periodic metal concentration profiles across the wafer with different frequency for each metal ingredient have been applied. By using the Pt-Ce-Fe ternary as an example, it is demonstrated that the Fourier transform of sinusoidal metal concentrations represents an effective tool of averaging over experimental fluctuations and non-uniformities across the wafer as well as directly finding correlations from the Fourier coefficients (e.g. synergistic metal combinations). 14

Refs.

L19 ANSWER 15 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1059776 CAPLUS
DOCUMENT NUMBER: 142:87815
TITLE: Position of chromatographic techniques in screening
for detection of drugs or poisons in clinical and
forensic toxicology and/or doping control
AUTHOR(S): Maurer, Hans H.
CORPORATE SOURCE: Department of Experimental and Clinical Toxicology,
Institute of Experimental and Clinical Pharmacology
and Toxicology, University of Saarland, Homburg
(Saar), Germany
SOURCE: Clinical Chemistry and Laboratory Medicine (2004),
42(11), 1310-1324
CODEN: CCLMFW; ISSN: 1434-6621
PUBLISHER: Walter de Gruyter GmbH & Co. KG
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. This paper reviews chromatog. screening procedures
for simultaneous detection of several drug classes relevant to clin. and
forensic toxicol. or doping control in urine or blood using gas
chromatog.-mass spectrometry (GC-MS), liquid chromatog. coupled with a
diode-array detector (LC-DAD) or a mass
spectrometer (LC-MS). The pros and cons of the different
techniques and procedures are discussed leading to the following
conclusions and perspectives. GC-MS, especially in the electron ionization
full-scan mode, is still the method of choice for comprehensive screening
providing best separation power, specificity and universality, although
requiring derivatization. LC-DAD is also often used for screening, but
its separation power and its specificity are still inferior to those of GC-MS.
Finally, LC-MS has shown to be an ideal supplement, especially for the
detection
of more polar, thermolabile and/or low-dose drugs, especially in blood plasma.
It may become the gold standard in clin. and forensic toxicol. and doping
control if, at a later date, the costs of the apparatus will be markedly
reduced, the current disadvantages like irreproducibility of
fragmentation, reduction of ionization by matrix, etc. will be overcome, and
finally if one of the increasing number of quite different techniques will
become the apparatus standard
REFERENCE COUNT: 151 THERE ARE 151 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
FORMAT

L19 ANSWER 16 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:953620 CAPLUS
DOCUMENT NUMBER: 144:372811
TITLE: Fourier transform combinatorial chemistry applied to
the discovery of novel catalysts for the
water-gas-shift reactions
AUTHOR(S): Yaccato, Karin; Brooks, Christopher J.; Carhart, Ray;
Hagemeyer, Alfred; Volpe, Anthony F.; Turner, Howard
W.; Weinberg, W. Henry
CORPORATE SOURCE: Symyx Technologies Inc., Santa Clara, CA, 95051, USA
SOURCE: AIChE Annual Meeting, Conference Proceedings, Austin,
TX, United States, Nov. 7-12, 2004 (2004),
537A/1-537A/9. American Institute of Chemical
Engineers: New York, N. Y.
DOCUMENT TYPE: CODEN: 69GSKT; ISBN: 0-8169-0965-2
Conference; (computer optical disk)
LANGUAGE: English
AB High-throughput synthesis and screening methods have been developed for

the discovery of families of high activity H₂O-gas-shift (WGS) catalysts. The discovery libraries, for primary screening, consisted of 16+16 arrays of 256 catalysts on 4" quartz wafers. Catalysts were prepared by robotic liquid dispensing techniques and screened for catalytic activity in Symyx' Scanning Mass Spectrometer at 200-450°. The ScanMS is a fast serial screening tool that uses flat wafer catalyst surfaces, local laser heating, a scanning/sniffing nozzle and a quadrupolar mass spectrometer to compare relative catalytic activities. The feed consisted of CO, CO₂, H₂, H₂O with Kr as internal standard in Ar carrier gas. More than 250,000 expts. were conducted to comprehensively examine catalyst performance for various binary, ternary and higher-ordered compns. The discovered lead compds. encompass supported noble metal systems as well as non-noble metal compns. Linear grid search strategies as well as modulation techniques using periodic metal concentration profiles across the wafer with different frequency for each metal ingredient have been applied. By using the Pt-Ce-Fe ternary as an example, the Fourier transform of sinusoidal metal concns. represents an effective tool of averaging over exptl. fluctuations and non-uniformities across the wafer as well as directly finding correlations from the Fourier coeffs. (e.g. synergistic metal combinations).

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 17 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:245575 CAPLUS

DOCUMENT NUMBER: 141:46508

TITLE: Performance of a multiplexed chemical ionization miniature cylindrical ion trap array mass spectrometer

AUTHOR(S): Tabert, Amy M.; Misharin, Alexander S.; Cooks, R. Graham

CORPORATE SOURCE: Department of Chemistry, Purdue University, West Lafayette, IN, 47907-2084, USA

SOURCE: Analyst (Cambridge, United Kingdom) (2004), 129(4), 323-330

CODEN: ANALAO; ISSN: 0003-2654
PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The performance of a multiplexed array of miniature cylindrical ion trap (CIT) mass spectrometers composed of four identical sets of ion source/mass analyzer/detector channels is evaluated. Each miniature cylindrical ion trap (inner radius 2.5 mm) was coupled to an external chemical ionization/electron ionization (CI/EI) source and a miniature (inner diameter 2 mm) electron multiplier. The sample introduction system permits delivery of samples and reagent gases directly into any one or more of the ionization vols. Exptl. conditions were optimized as required for CI to occur in one or more ion vols. The ion source potential was observed to affect the energy of [M + H]⁺ ions generated by self-chemical ionization in the external ion sources and, thus, the degree of fragmentation observed in resulting mass spectra. The versatility of this novel instrumentation permits two types of multi-channel expts. In the 1st, different samples are analyzed at the same time in identical, parallel channels for high-throughput mass anal. using CI. In the 2nd, the instrument was used for improved specificity in the anal. of a single sample by simultaneous measurements made with multiple methods of ionization, including EI and methane CI in adjacent channels of the instrument.

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L19 ANSWER 18 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:224617 CAPLUS
TITLE: High throughput screening for the discovery of more efficient catalysts for emissions control
AUTHOR(S): Hagemeyer, Alfred; Volpe, Anthony F.; Yaccato, Karin
CORPORATE SOURCE: Heterogeneous Catalysis, Symyx Technologies, Santa Clara, CA, 95051, USA
SOURCE: Abstracts of Papers, 227th ACS National Meeting, Anaheim, CA, United States, March 28-April 1, 2004 (2004), ENVR-138. American Chemical Society: Washington, D. C.
CODEN: 69FGKM
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English
AB High-throughput synthesis and screening methods have been developed for the discovery of highly active catalysts for the control of emissions from stationary and mobile sources. Low temperature CO oxidation, CO methanation, NOx abatement and the destruction of Volatile Organic Compds. (VOCs) will be discussed. The discovery libraries for primary screening consisted of both 11x11 and 16x16 catalyst arrays on 3" and 4" quartz wafers, resp. Catalysts were prepared by robotic liquid dispensing techniques and screened for catalytic activity in Symyx's Scanning Mass Spectrometer. The screening protocols encompassed mixed metal oxides, perovskites and supported base and noble metals. Active hits were further optimized in focus libraries using shallower compositional gradients. The ScanMS is a fast serial screening tool that uses flat wafer catalyst surfaces, local laser heating, a scanning/sniffing nozzle and a quadrupolar mass spectrometer to compare relative catalytic activities. The temperature range from 200C to 600C is accessible. Typically, 256 catalysts can be screened per day and about 100,000 expts. conducted annually.

L19 ANSWER 19 OF 53 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:603378 CAPLUS
DOCUMENT NUMBER: 141:194446
TITLE: High throughput screening of low temperature SCR and SCD De-NOx catalysts in scanning mass spectrometer
AUTHOR(S): Yaccato, Karin; Hagemeyer, Alfred; Lesik, Andreas; Volpe, Anthony; Weinberg, Henry
CORPORATE SOURCE: Symyx Technologies Inc., Santa Clara, CA, 95051, USA
SOURCE: Topics in Catalysis (2004), 30/31(1-4), 127-132
CODEN: TOCAFI; ISSN: 1022-5528
PUBLISHER: Kluwer Academic/Plenum Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB High-throughput synthesis and screening methods have been developed for the discovery of highly active lead compds. for the selective catalytic reduction as well as direct decomposition of NO in the temperature range 200-300 °C. The discovery libraries for primary screening consisted of 16 + 16 catalyst arrays on 4 in. square quartz wafers. Catalysts were prepared by robotic liquid dispensing techniques and screened for catalytic activity in Symyx' scanning mass spectrometer. The scanning mass spectrometer is a fast serial screening tool that uses flat wafer catalyst surfaces, local laser heating, a scanning/sniffing nozzle and a quadrupolar mass spectrometer to compare relative catalytic activities. The feed consisted of NO/NH3 mixts. with optional O2 cofeed and Kr as the internal standard in Ar carrier gas. QMS detection allowed for tracking of H2O, N2, NO, O2, N2O and Kr. Screening protocols

for catalytic materials encompassed metal precursors and carriers for supported vanadia systems, extensive doping of V2O5/TiO2, and broad screening of mixed redox metal oxides and supported base and noble metal systems. More than 500 samples could be screened in a single day. Active hits (high NO consumption accompanied by corresponding N2 production) identified in discovery libraries were re-synthesized as focus libraries for lead confirmation and further optimization. These libraries used shallower compositional gradients, for example 56 points (compsns.) per ternary, with four 56-point ternaries per 4 in. wafer. Broad screening ternaries were generally 8 or 15 points. The focus libraries more clearly reveal the trends and provide guidelines for secondary screening and scale-up. High conversions were achieved in scanning mass spectrometer so the scalability risk is small for the short contact time reactions.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> display 120 1-53 ibib abs

L20 ANSWER 1 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:453547 CAPLUS
DOCUMENT NUMBER: 145:106737
TITLE: Preparation method for chip having water retention property and used for a proton exchange membrane fuel cell
INVENTOR(S): Mu, Shichun; Yu, Jun; Chen, Lei; Pan, Mu; Yuan, Runzhang
PATENT ASSIGNEE(S): Wuhan University of Technology, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 10 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1719653	A	20060111	CN 2005-10018740	20050519
PRIORITY APPLN. INFO.:			CN 2005-10018740	20050519

AB The title chip having water retention property is prepared by preparing a catalyst slurry containing catalyst, proton exchange resin and solvent at a mass ratio of 10:(2-5):(50-100); preparing an inorg. nanoparticle slurry by mixing SiO2, TiO2, Zr(HPO4)2 or ZrO2 nanoparticles water solution or colloidal solution with a solution of proton exchange resin; coating or screen-printing the catalyst slurry onto polytetrafluoroethylene film to form a 1-5 μ m catalyst layer; drying; coating or screen-printing the inorg. nanoparticle slurry onto the catalyst layer to form a 1-5 μ m water retention layer; arranging a proton exchange membrane between two modified polytetrafluoroethylene films by contacting proton exchange membrane with water retention layer; hot-pressing at 80-130°C under 0.2-5 MPa for 1-5 min; and stripping polytetrafluoroethylene film to obtain the final product. The catalyst is selected from Pt, Pt alloy, and Pt or Pt alloy supported on carbon material.

L20 ANSWER 2 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:89912 CAPLUS
DOCUMENT NUMBER: 145:127444
TITLE: High-throughput screening of binary catalysts for oxygen electroreduction
AUTHOR(S): Liu, Jing Hua; Jeon, Min Ku; Woo, Seong Ihl

CORPORATE SOURCE: Center for Ultra-microchemical Process Systems,
Department of Chemical and Biomolecular Engineering,
Korea Advanced Institute of Science and Technology,
373-1, Kuseong-Dong, Yuseong-gu, Daejeon, 305-701, S.
Korea

SOURCE: Applied Surface Science (2006), 252(7), 2580-2587
CODEN: ASUSEE; ISSN: 0169-4332

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of Pt based and non-Pt catalysts for proton exchange membrane fuel cell (PEMFC) and direct methanol fuel cell (DMFC) have been evaluated towards oxygen reduction, by high-throughput optical screening. Fluorescein was first used as pH indicator for detecting pH change of the electrolyte in the vicinity of cathode caused by oxygen reduction. Arrays of catalyst spot comprised of binary catalysts and pure Pt were prepared by using robotic micro-dispenser. The anal. of fluorescence images has showed that some of Pt based catalysts including PtBi, PtCu, PtSe, PtTe and PtIr, as well as RuFe, as a non-Pt catalyst, exhibited higher activities and methanol tolerance than pure Pt. Moreover, acceptable stability of these catalysts at high potential in acid environment suits them to the requirements of cathode catalyst in PEMFC or DMFC.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 3 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:89911 CAPLUS
DOCUMENT NUMBER: 145:86393
TITLE: High-throughput screening of fuel cell electrocatalysts
AUTHOR(S): Smotkin, Eugene S.; Jiang, Junhua; Nayar, Amit; Liu, Renxuan
CORPORATE SOURCE: Department of Chemistry, University of Puerto Rico at Rio Piedras, San Juan, 00931, P. R.
SOURCE: Applied Surface Science (2006), 252(7), 2573-2579
CODEN: ASUSEE; ISSN: 0169-4332
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The drawbacks of our earlier report of preparing fuel cell catalyst arrays by borohydride reduction of inkjet prepared arrays of metal salts are discussed along with the need for inclusion of state-of-the-art metrics in all array screening. An alternative method for screening of hydrogen/air cathode catalysts, direct methanol fuel cell (DMFC) anode catalysts, and catalyst loading studies is provided. State-of-the-art Johnson Matthey catalysts were used in control expts. to demonstrate the utility of the array fuel cell for high throughput screening of fuel cell catalysts in the 3-4 mg/cm² range. This report lays out hard learned rules for high throughput screening and demonstrates that the array fuel cell can be used for very precise screening of libraries of membrane electrode assembly (MEA) components without the pitfalls discussed in the introduction.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 4 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:451268 CAPLUS
DOCUMENT NUMBER: 142:465531
TITLE: Device for carrying out liquid reactions with fine-grained solid catalysts and method for the use thereof
INVENTOR(S): Zanthoff, Horst-Werner; Maschmeyer, Dietrich;

PATENT ASSIGNEE(S): Schwaertzke, Thorsten; Robers, Udo; Voelkel, Anita
 Oxeno Olefinchemie G.m.b.H., Germany
 SOURCE: PCT Int. Appl., 33 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005046857	A1	20050526	WO 2004-EP52202	20040916
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10353391	A1	20050616	DE 2003-10353391	20031115
EP 1682256	A1	20060726	EP 2004-787151	20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
PRIORITY APPLN. INFO.:			DE 2003-10353391	A 20031115
			WO 2004-EP52202	W 20040916

AB The reactor for carrying out catalyzed liquid reactions, whereby the catalyst is finely distributed in the reaction area, comprises at least one inlet and one outlet. All educts are supplied via the inlet and all products are discharged via the outlet. The inlet and outlet are provided with a means enabling the inlet and outlet to be connected in such a way that an outlet can be used as an inlet and at the same time an exit previously used as an outlet can be used as input used for an inlet. A filter element is provided on the inlet and outlet to retain the catalyst inside the reactor. A device is also provided in the reactor to ensure homogeneous distribution of the catalyst and educts in the reactor. Said reactor makes it possible to conduct reactions of the above variety with a high solid content without being obliged to sep. the catalyst from the production flow in an extra procedural step and without regular cleaning and interrupting the process.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 5 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:259444 CAPLUS
 DOCUMENT NUMBER: 142:319859
 TITLE: Electrochemical probe for screening multiple-cell arrays
 INVENTOR(S): Li, Yi-qun; Dong, Yi; Wang, Ning
 PATENT ASSIGNEE(S): Intematix Corp., USA
 SOURCE: U.S. Pat. Appl. Publ., 15 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005064251	A1	20050324	US 2004-857604	20040527
PRIORITY APPLN. INFO.:		US 2003-473596P		P 20030527
AB Novel systems for combinatorially screening an array of electrochem. cells are disclosed. The screening apparatus may comprise a system of electrodes and electrolytes common to each of the members of an electrochem. cell array. An electrochem. probe is used to supply a reactive fluid (or reactive species) to only one of the cells in the array at a time. The probe is configured to address each of the cells of the array individually, and to be chemical isolated from all of the other cells of the array. Thus, the cells of the array that are not being addressed by the probe are in a non-active condition. Such a system is capable of combinatorially screening a library of materials, including catalyst, electrode, and electrolyte materials, wherein each of the members of the library defines one of the cells of the array.				

L20 ANSWER 6 OF 42 CAPIUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:238491 CAPIUS
 DOCUMENT NUMBER: 142:319802
 TITLE: Mixed reactant molecular screen fuel cell
 INVENTOR(S): Jerome, Allan
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 16 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005058875	A1	20050317	US 2004-909275	20040730
PRIORITY APPLN. INFO.:		US 2003-491413P		P 20030730
		US 2003-524475P		P 20031124

AB In one aspect, the present invention provides a fuel cell having a first membrane selective to a fuel, a second membrane selective to an oxidant, and a mixed reactant flow provided to the screens. The invention further includes an anode, a cathode and a semi-permeable electrolyte fluidly separating the same.

L20 ANSWER 7 OF 42 CAPIUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1216487 CAPIUS
 DOCUMENT NUMBER: 143:443634
 TITLE: Manufacture of crack-free membrane-electrode assemblies (MEA) with flat surface for fuel cells by printing process
 INVENTOR(S): Chen, Chang Ying; Yang, Peng; Li, Sheng; Lin, Chin Fu
 PATENT ASSIGNEE(S): Executive Yuan Atomic Energy Council, Institute of Nuclear Energy, Taiwan
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005322531	A2	20051117	JP 2004-140137	20040510
PRIORITY APPLN. INFO.:		JP 2004-140137		20040510

AB The process comprises these steps; arranging (washed and) cut pieces of ion exchange membranes (A) on thin substrates, fixing the substrates to frames of screen printing stages, applying catalyst

pastes on (mesh) screen fabrics (B) uniformly with squeezers, printing B on A, baking A on hot plates, and aging for a while to recover surface flatness of A. The resultant MEA exhibit good surface flatness and crack-free texture. This process is suited for mass production of MEA with good quality at low cost.

L20 ANSWER 8 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:945250 CAPLUS
DOCUMENT NUMBER: 143:443390
TITLE: Pd-Ti and Pd-Co-Au Electrocatalysts as a Replacement for Platinum for Oxygen Reduction in Proton Exchange Membrane Fuel Cells.
AUTHOR(S): Fernandez, Jose L.; Raghubeer, Vadari; Manthiram, Arumugam; Bard, Allen J.
CORPORATE SOURCE: Department of Chemistry and Biochemistry, Laboratory of Electrochemistry, Materials Science and Engineering Program, University of Texas, Austin, TX, 78712, USA
SOURCE: Journal of the American Chemical Society (2005), 127(38), 13100-13101
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB High material and manufacturing costs hampers the commercialization of fuel cells. The limited availability and the high cost of platinum catalysts, for example, pose a serious problem in their practical application. The non-platinum electrocatalyst systems, Pd-Co-Au and Pd-Ti, are suggested as alternatives based on thermodyn. guidelines. These catalysts were selected by a rapid screening technique and they show electrochem. performance in proton exchange membrane fuel cells similar to that of com. platinum catalysts. This shows the way to develop less expensive electrocatalysts.
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 9 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
ACCESSION NUMBER: 2005:1338338 CAPLUS
DOCUMENT NUMBER: 145:78632
TITLE: Microreaction technology in education: Miniaturized enzyme membrane reactor
AUTHOR(S): Mueller, Daniela H.; Liauw, Marcel A.; Greiner, Lasse
CORPORATE SOURCE: Institut fuer Technische und Makromolekulare Chemie, RWTH-Aachen, Aachen, D-52074, Germany
SOURCE: Chemical Engineering & Technology (2005), 28(12), 1569-1571
CODEN: CETEER; ISSN: 0930-7516
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Persuading students of microreaction technol. requires the development of new and attractive expts. for practical courses. A means of establishing a microreaction experiment for practical courses in chemical higher education is miniaturizing the enzyme membrane reactor (EMR). Biotechnol., in particular membrane separation and biocatalysis are incorporated. Moreover, this miniaturization is also of scientific interest as the micro enzyme membrane reactor (MEMR) can be used for catalyst screening and early-stage continuous expts. The MEMR was realized modularly as a loop reactor by easy means. A reactor volume of less than 200 μ L was achieved. The amount needed for continuous reactions is lowered by a factor of 50. Enantioselective reduction of ketones by an alc. dehydrogenase was performed successfully.

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 10 OF 42 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8535610 INSPEC
DOCUMENT NUMBER: A2005-19-8630G-004; B2005-09-8410G-060
TITLE: Removal of carbon monoxide from hydrogen-rich fuels by selective low-temperature oxidation over base metal added platinum catalysts
AUTHOR: Dong Jin Suh; Chan Kwak; Jin-Hong Kim; Se Mann Kwon; Tae-Jin Park (Clean Technol. Res. Center, Korea Inst. of Sci. & Technol., South Korea)
SOURCE: Journal of Power Sources (24 March 2005), vol.142, no.1-2, p. 70-4, 13 refs.
CODEN: JPSODZ, ISSN: 0378-7753
SICI: 0378-7753(20050324)142:1/2L.70:RCMF;1-#
Doc.No.: S0378-7753(04)01002-X
Published by: Elsevier, Switzerland
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: Switzerland
LANGUAGE: English
AN 2005:8535610 INSPEC DN A2005-19-8630G-004; B2005-09-8410G-060
AB Various catalysts containing different catalytic materials, supports, and additives were tested for the preferential oxidation (PROX) of carbon monoxide from a hydrogen-rich gas stream. The results were analyzed based on three reactions involved in the PROX: oxidation of carbon monoxide, H₂-O₂ reaction, and methanation. The PROX reactions were performed in two reaction systems, one for catalyst screening and kinetic study and the other for simulation of the catalytic performance under real reaction conditions. The performances of PROX on different catalysts, varying active components, supports, and additives, were ranked in terms of carbon monoxide conversion and hydrogen consumption. Base metal added platinum catalysts exhibited excellent ability for the carbon monoxide removal. TPR results indicated that a new active species was formed resulting in the enhancement of catalytic activity. PtCo/Al₂O₃ was tested with a simulated steam-reformed fuel for confirmation of its high activity. The effect of operating conditions was analyzed on the PtCo/Al₂O₃, and the optimum conditions for PROX were obtained. [All rights reserved Elsevier]

L20 ANSWER 11 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:964663 CAPLUS
DOCUMENT NUMBER: 141:413616
TITLE: High throughput screening device for combinatorial chemistry
INVENTOR(S): Smotkin, Eugene S.; Nayar, Amit
PATENT ASSIGNEE(S): Nuvant Systems, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 21 pp., Cont.-in-part of U.S. Ser. No. 907,628.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004224204	A1	20041111	US 2004-778358	20040217
WO 2002006807	A2	20020124	WO 2001-US22137	20010716
WO 2002006807	A3	20030403		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
 UZ, VN, YU, ZA, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AM, AZ, BY, KG,
 KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR,
 IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN,
 GW, ML, MR, NE, SN, TD, TG

US 2002009627 A1 20020124 US 2001-907628 20010719
 US 6692856 B2 20040217

PRIORITY APPLN. INFO.: US 2000-219107P P 20000719
 WO 2001-US22137 A2 20010716
 US 2001-907628 A2 20010719

AB A high throughput screening device for combinatorial chemical, comprising a membrane electrode assembly, an array of sensor electrodes and one or more common electrodes, wherein a total cross-sectional area of the one or more common electrodes is greater than a sum of the cross-sectional areas of the sensor electrodes is disclosed. This device obtains performance data from each and every array electrode simultaneously and does not require the movement of any electrode during data acquisition. Some application among many possible applications of the device of this invention is in the development and evaluation of catalysts (anode and cathode catalysts) for fuel cells and electrolysis systems. One embodiment of the invention relates to an array fuel cell that utilizes a counter electrode flow field and a multiple inlet gas fed array electrode flow field that permits the evaluation of 25 fuel cell electrocatalyst surfaces simultaneously or in groups.

L20 ANSWER 12 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:331695 CAPLUS
 DOCUMENT NUMBER: 140:323489
 TITLE: Heat activated membrane introduction apparatus and method for screening materials
 INVENTOR(S): Nayar, Amit; Liu, Renxuan; Willis, Richard R.; Smotkin, Eugene S.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 16 pp., Division of U.S. Ser. No. 900,843.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004077096	A1	20040422	US 2003-664730	20030918
US 6923939	B1	20050802	US 2001-900843	20010705

PRIORITY APPLN. INFO.: US 2001-900843 A3 20010705
 AB A process and apparatus for rapidly screening materials using, for example, mass spectrometry has been developed. More specifically, an array of materials on a fluid permeable support contained within a reaction cell having a semipermeable membrane can be rapidly screened for characteristics such as catalytic activity, selectivity, and adsorption and desorption properties.

L20 ANSWER 13 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1128885 CAPLUS
 DOCUMENT NUMBER: 142:75728
 TITLE: Optical film for optical multilayer membrane and reflective screen

INVENTOR(S): Morisawa, Kazuhiko; Katakura, Hitoshi
 PATENT ASSIGNEE(S): Sony Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004361922	A2	20041224	JP 2004-72200	20040315
PRIORITY APPLN. INFO.:			JP 2003-137792	A 20030515
AB Title optical film comprises a substrate coated with a coating A and coating B resp.; wherein the coating A contains 25-40 vol% fine particles, an organic solvent having solubility parameter 7.3-10, and a curable resin A with cured products having mol. weight 350-50,000; and wherein the coating B contains an organic solvent having solubility parameter <7.3 or >10 and a resin B with solubility parameter ≤2.7 than that of the resin A. Thus, an optical film was prepared by coating a PET film with a coating containing TiO ₂ 100, urethane-acrylate (solubility parameter 9.5) 50, MIBK (solubility parameter 8.4) 4800 parts, and Darocur 1173 3 wt%, cured with UV radiation, then coated with coating containing carboxyl-terminated perfluorobutenylvinyl ether polymer (solubility parameter 6.2) 100, perfluorohexyl ethanol-perfluorobutylamine mixture (95:5, solubility parameter 6.0) 1,666 parts.				

L20 ANSWER 14 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:719852 CAPLUS
 DOCUMENT NUMBER: 141:218059
 TITLE: Manufacture of sample arrays for the preparation and testing of catalysts
 INVENTOR(S): Duff, Daniel Gordon; Koehler, Burkhard
 PATENT ASSIGNEE(S): Bayer Technology Services GmbH, Germany
 SOURCE: Ger. Offen., 13 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10304160	A1	20040902	DE 2003-10304160	20030203
PRIORITY APPLN. INFO.:			DE 2003-10304160	20030203
AB A substrate for the manufacture of sample arrays, especially for the preparation and testing of the activity of catalysts, consists of a gas-permeable ceramic membrane made of alumina, zirconia, zeolite, cordierite, or titania, and a polymeric coating having hydrophobic COOH groups. Preferably, the polymeric coating consists of polyisobutylene carbonic acid. The membrane has a porosity of 0.1-10 μm and a median pore diameter of 0.5-5 μm. The coated side of the membrane has wells for applying the catalyst samples. The catalyst samples are preferably aqueous metal salt solns., especially nitrates, carbonates, or oxalates of transition metals of the 1st to 3rd row of the periodic system. The samples are thermally treated at 200-1200° to decompose them in air, followed by optional reductive treatment using hydrogen. The substrate can be coated with an addnl. fluorescence-active layer which is sensitive				

to the reaction products.

L20 ANSWER 15 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:224074 CAPLUS
TITLE: Microreactors for catalysis using nano-catalysts
AUTHOR(S): Kuila, Debasish; Zhao, Shihuai; Nagineni, Venkata S.;
Potluri, Avinash; Indukuri, H.; Liang, Yu; Cao, W.;
Hu, J.; Fang, Ji; Varahramyan, K.; Nassar, Raja;
Palmer, James; Siriwardane, Upali; Naidu, Seetala V.
CORPORATE SOURCE: Institute for Micromanufacturing/Chemistry, Louisiana
Tech University, Ruston, LA, 71272, USA
SOURCE: Abstracts of Papers, 227th ACS National Meeting,
Anaheim, CA, United States, March 28-April 1, 2004
(2004), COLL-473. American Chemical Society:
Washington, D. C.
CODEN: 69FGKM
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English
AB Microchannel microreactors based on Si (5-100 μ) have been used to study heterogeneous catalysis of three significant reactions: hydrogenation and dehydrogenation of cyclohexene, preferential oxidation for CO amelioration in feed for Proton Exchange Membrane (PEM) based fuel cells and Fischer-Tropsch synthesis to higher alkane fuels. For the prototype reaction, a 95 % conversion of cyclohexene has been achieved with sputtered and sol-gel coated platinum catalyst. Conversion of synthesis gas (CO:H₂) to higher alkanes (.apprx. 75% with a selectivity to propane of 80%) and carbon monoxide to carbon dioxide (.apprx. 90% conversion with a selectivity of 90% to CO₂) to process the feed gas have also been quite successful. The nano-catalysts for these processes have been characterized using SEM, EDX, AFM, VSM and BET surface area measurements. A parallel-array of reactors has been developed for multiple reaction studies and catalyst screening. Design of expts. for these reactions will be presented.

L20 ANSWER 16 OF 42 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2005(31):6451 COMPENDEX
TITLE: A high throughput screening approach to catalyst improvement for direct methanol fuel cell anodes.
AUTHOR: Deshpande, Kishori (School of Chemical Engineering
Purdue University, West Lafayette, IN 47907-2100,
United States); Mukasyan, Alexander; Varma, Arvind
MEETING TITLE: 2004 AIChE Annual Meeting.
MEETING LOCATION: Austin, TX, United States
SOURCE: AIChE Annual Meeting, Conference Proceedings 2004.p
361-371

SOURCE: 2004 AIChE Annual Meeting, Conference Proceedings
PUBLICATION YEAR: 2004
MEETING NUMBER: 65271
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English

AN 2005(31):6451 COMPENDEX

AB An approach for synthesis and screening of catalysts for direct methanol fuel cell (DMFC) applications is described. In the first step, the aqueous combustion synthesis (CS) was used for rapid preparation of nanoscale complex oxides (perovskites, cuprates). In the second step, the catalytic activity of the obtained high surface area complex oxide powders was evaluated using a high throughput screening unit, the NuVant System. The system allows simultaneous comparison of catalytic activities for 25 different catalyst under DMFC conditions. The results show that the Sr-based perovskites show compound performance with Pt-Ru. The study reveals the utility of the approach for catalyst

screening for fuel cell applications. (Edited abstract) 11 Refs.

L20 ANSWER 17 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2005:1107406 CAPLUS

DOCUMENT NUMBER: 145:127393

TITLE: High performance polymer electrolyte membrane
fuel cell electrodes

AUTHOR(S): Rajalakshmi, N.; Rajini, R.; Dhathathreyan, K. S.

CORPORATE SOURCE: Centre for Fuel Cell Technology, Chennai, 601 302,
India

SOURCE: Fuel Cell Science, Engineering and Technology--2004,
presented at the International Conference on Fuel Cell
Science, Engineering and Technology, 2nd, Rochester,
NY, United States, June 14-16, 2004 (2004), 301-304.
Editor(s): Shah, Ramesh K.; Kandlikar, Satish G.
American Society of Mechanical Engineers: Fairfield,
N. J.

CODEN: 69HLOH; ISBN: 0-7918-4165-0

DOCUMENT TYPE: Conference

LANGUAGE: English

AB Several methods are being attempted to improve the performance of PEM Fuel cell electrodes so that the cost of the overall system can be brought down. The performance can be improved if the utilization of the catalyst in the electrode increases. One of the early successful method was to add a proton conducting polymer, such as Nafion to the catalyst layer. However there is a limit to the amount of Nafion that can be added as too much Nafion affect the gas diffusion. The other method is to increase the surface area of the catalyst used which has also been adequately demonstrated. Alternative methods for providing increased proton conductivity and catalyst utilization are thus of great interest, and a number of them have been investigated in the literature. One method that is being extensively investigated is to introduce the catalyst onto the polymer electrolyte membrane followed by lamination with gas diffusion electrode. In the present work, we have carried out two methods i) screen print the catalyst ink on the Nafion membrane ii) catalyze the Nafion membranes by reducing a suitable platinum salt on the membrane. Standard gas diffusion electrodes were then laminated onto this membrane. The performances of Membrane Electrode Assemblies (MEAs) prepared by these routes have been compared with the com. available Gore catalyzed membrane. It was observed that catalyzed Nafion membranes show a better performance compared to the catalyst ink screen printed on the Nafion membrane and com. Gore membrane under identical operating conditions. However MEAs with Gore membrane give a better performance in the IR region compared to the other MEAs prepared using Nafion membrane. The lesser performance with Gore membrane is probably due to the limitations in the lamination method employed.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 18 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:93974 CAPLUS

DOCUMENT NUMBER: 140:272677

TITLE: A screening workflow for synthesis and testing of 10,000 heterogeneous catalysts per day - lessons learned

AUTHOR(S): Duff, Daniel G.; Ohrenberg, Arne; Voelkening, Stephan;
Boll, Matthias

CORPORATE SOURCE: Process Technology, Bayer Technology Services GmbH,
Leverkusen, 51368, Germany

SOURCE: Macromolecular Rapid Communications (2004), 25(1),

AB A workflow was developed, in which 10,000 Cr-Fe-Cu mixed oxide phase compds. on α -Al₂O₃ ceramic membrane supports per day were synthesized and their activity tested in a heterogeneously catalyzed gas phase reaction (alkene epoxidn.). The study was carried out to attempt to locate boundaries achievable by the use of high-throughput technologies in the field of heterogeneous catalysis. The catalysts were synthesized by dosing precursor solns. onto a single substrate, using ink-jet printer technol. and subsequent thermal treatment. For activity testing, the product stream of each candidate was conducted through a detection layer, where the target product was converted into a fluorescent substance. By locally resolved fluorescence spectroscopy a rough assessment of each candidate was possible. Because a throughput of 10,000 substances per day is still not able to map the whole parameter space in a practicable amount of time, a combination of evolutionary optimization and data mining methods were used as experiment design strategy for the reduction of the exptl. parameter space. It became apparent that a throughput of 10,000 substances per day was only possible at the cost of abstraction and simplification with a concomitant reduction in knowledge gain per individual experiment. Because not every reaction is suited to be simplified in such a manner, whether a high-throughput screening approach is effective or not has to be considered on a case by case basis.

L20 ANSWER 19 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:737633 CAPLUS
DOCUMENT NUMBER: 139:247846
TITLE: Production of hydrogen by catalytic steam reforming in a membrane reactor/purifier
INVENTOR(S): Krueger, Charles W.
PATENT ASSIGNEE(S): HY9 Corporation, USA
SOURCE: PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003076062	A2	20030918	WO 2003-IB899	20030312
WO 2003076062	A3	20031127		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2477852	AA	20030918	CA 2003-2477852	20030312
US 2003172589	A1	20030918	US 2003-393772	20030312
AU 2003212554	A1	20030922	AU 2003-212554	20030312
EP 1519784	A2	20050406	EP 2003-708375	20030312
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005519830	T2	20050707	JP 2003-574324	20030312

CN 1638859	A 20050713	CN 2003-805707	20030312
PRIORITY APPLN. INFO.:		US 2002-363672P	P 20020312
		WO 2003-IB899	W 20030312

AB A membrane reactor/purifier for producing mixts. of H₂ and carbon oxides by steam reforming a gaseous or externally gasified fossil fuel or a derivative, especially methanol or methane, and generating pure H₂ by permeating the product mixture through a planar hydrogen-selective palladium alloy membrane at 200-650°C consists of a stack containing an array of pairs of high and low pressure chambers connected to each other by the membrane and interconnected by metallic heat conducting plates impervious to all the present gases. Each high pressure chamber is provided with a gas-porous turbulence-promoting screen structure washcoated with a steam-reforming catalyst. The reactor/purifier has a unitary metallic structure wherein each low pressure chamber is provided with a gas-porous metallic membrane support facilitating the heat transfer with the catalyst. The catalyst holder structure can consist of a metallic screen, a woven glass cloth, or a non-flattened expanded metal. The catalyst can contain Cu, Fe, and/or Ni supported on a cerium-containing oxide.

L20 ANSWER 20 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:455045 CAPLUS
 DOCUMENT NUMBER: 139:23079
 TITLE: Aqueous ionomeric gels and products and methods related thereto
 INVENTOR(S): Gervais, Wesley; Lauritzen, Michael V.; Zychowka, Kristi M.; Vanderark, Lawrence A.; Colbow, Kevin Michael
 PATENT ASSIGNEE(S): Ballard Power Systems Inc., Can.
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003109631	A1	20030612	US 2001-15528	20011212
US 6679979	B2	20040120		
CA 2414445	AA	20030612	CA 2002-2414445	20021211
US 2004162384	A1	20040819	US 2003-712400	20031112
US 7060166	B2	20060613		

PRIORITY APPLN. INFO.: US 2001-15528 A 20011212
 AB An aqueous ionomer gel is characterized by having a high viscosity, particularly a proton conducting ionomer, as well as to related products incorporating such gels (e.g., Nafion). Such aqueous ionomer gels are suitable for suspending catalysts for formation of catalyst inks, which in turn are suitable for screen printing on a variety of surfaces. Representative surfaces are the electrode or membrane surfaces in an electrochem. fuel cell. Methods for making aqueous ionomer gels are also disclosed.

L20 ANSWER 21 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:72390 CAPLUS
 DOCUMENT NUMBER: 136:105194
 TITLE: High throughput screening device for combinatorial chemistry with application to evaluation of catalysts for fuel cells and electrolysis systems
 INVENTOR(S): Smotkin, Eugene C.
 PATENT ASSIGNEE(S): Nuvant Systems, LLC, USA
 SOURCE: PCT Int. Appl., 28 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002006807	A2	20020124	WO 2001-US22137	20010716
WO 2002006807	A3	20030403		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2004224204	A1	20041111	US 2004-778358	20040217
PRIORITY APPLN. INFO.:			US 2000-219107P	P 20000719
			WO 2001-US22137	A2 20010716
			US 2001-907628	A2 20010719

AB A high throughput screening device for combinatorial chemical, comprising a membrane electrode assembly, an array of sensor electrodes and one or more common electrodes, wherein a total cross-sectional area of the one or more common electrodes is greater than a sum of the cross-sectional areas of the sensor electrodes is disclosed. This device obtains performance data from each and every array electrode simultaneously and does not require the movement of any electrode during data acquisition. Some application among many possible applications of the device of this invention is in the development and evaluation of catalysts (anode and cathode catalysts) for fuel cells and electrolysis systems.

L20 ANSWER 22 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:107776 CAPLUS

DOCUMENT NUMBER: 136:141575

TITLE: Electrolytic system and methods for screening catalytic materials

INVENTOR(S): Symons, Peter G.; Genders, J. David

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 9 pp.

DOCUMENT TYPE: CODEN: USXXCO

LANGUAGE: Patent

FAMILY ACC. NUM. COUNT: English

1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002014413	A1	20020207	US 2001-920243	20010801
WO 2002012593	A2	20020214	WO 2001-US24424	20010802
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

AU 2001083111 A5 20020218 AU 2001-83111 20010802
PRIORITY APPLN. INFO.: US 2000-223238P P 20000804
US 2001-920243 A 20010801
WO 2001-US24424 W 20010802

AB A system for screening and measuring the effectiveness of catalysts, comprising an electrolytic cell having a counter electrode comprising a plurality of segmented anodes, each of the anodes elec. isolated from each other, and a catalyst support adapted for holding an associated plurality of cathodes, where each cathode is operatively arranged to function as a working electrode when a discrete catalyst is deposited thereon, wherein the catalyst support positioned between the counter electrode and the working electrodes, and, means for measuring current in each of the plurality of segmented anodes, where the current is an indication of effectiveness of each discrete catalyst.

L20 ANSWER 23 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 2002:404830 CAPLUS

DOCUMENT NUMBER: 137:84941

TITLE: Development of specific catalysts for detritiation of gases by counter current isotopic swamping

AUTHOR(S): Glugla, M.; Le, T. L.; Gross, S.; Niyongabo, D.; Lasser, R.; Simon, K. H.

CORPORATE SOURCE: Tritiumlabor, Forschungszentrum Karlsruhe GmbH, Karlsruhe, D-76021, Germany

SOURCE: Fusion Science and Technology (2002), 41(3, Pt. 2), 969-973

CODEN: FSTUCY

PUBLISHER: American Nuclear Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The principal techniques developed by different research groups for the detritiation of primary gaseous wastes are altogether based on processes with multiple stages comprising at least one step involving heterogeneously catalyzed chemical reactions. While the permeation of H isotopes through Pd/Ag membranes combined with heterogeneously catalyzed reactions were proven to be particularly suitable for highly contaminated gases, isotopic swamping in a counter current mode is the method of choice in ITER for the final detritiation and recovery of residual amts. of T. Since the catalyst employed to promote the isotope exchange reactions should not support methanation of CO and CO₂ an attempt was made to design a highly selective exchange catalyst. Amongst the catalysts screened with methane - D exchange and C oxide - methanation as test reactions a high temperature reduced Pd/SiO₂ catalyst was found to match the selectivity requirements. However, even though the Pd/SiO₂ catalyst shows very little activity for methanation, CO was found to obstruct the isotope exchange reaction, whereas CO₂ does not show this unwanted effect.

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 24 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:852248 CAPLUS

DOCUMENT NUMBER: 138:228279

TITLE: Array membrane electrode assemblies for high throughput screening of direct methanol fuel cell anode catalysts

AUTHOR(S): Liu, Renxuan; Smotkin, Eugene S.

CORPORATE SOURCE: NuVant Systems, Chicago, IL, 60616, USA

SOURCE: Journal of Electroanalytical Chemistry (2002), 535(1-2), 49-55

CODEN: JECHE

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A fuel cell using an array membrane electrode assembly has been developed for the high throughput screening of fuel cell electrocatalysts. Standard membrane and electrode assembly methods are used. The use of modified fuel cell hardware permits the use of realistic catalyst exposure histories and steady state reaction conditions. The array fuel cell requires no supplemental electrolytes. The performance of the array fuel cell is demonstrated by the testing of one prepared inhouse and three com. available fuel cell catalysts. Within the potential range of a DMFC anode (i.e. 0.3-0.4 V), the catalyst rankings were PtRu (Johnson Matthey)>PtRu oxide (E-Tek)>PtRu (reduced by NaBH4)>Pt.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 25 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:655031 CAPLUS

DOCUMENT NUMBER: 135:183335

TITLE: Fuel cells and their manufacture

INVENTOR(S): Horikawa, Akihiro; Mifune, Tatsuo

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001243960	A2	20010907	JP 2000-56536	20000301
PRIORITY APPLN. INFO.:			JP 2000-56536	20000301

AB The fuel cells use polymer electrolyte membranes and electrodes having catalyst layer containing 0.001-0.60 mg Pt/cm3. The fuel cells are prepared by applying the catalyst layer on the electrode by nozzle spraying, screen printing, dipping, or doctor blade method.

L20 ANSWER 26 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2001:483343 CAPLUS

DOCUMENT NUMBER: 135:291143

TITLE: A carbon monoxide PROX reactor for PEM fuel cell automotive application

AUTHOR(S): Dudfield, C. D.; Chen, R.; Adcock, P. L.

CORPORATE SOURCE: Department of Automotive & Aeronautical Engineering, Loughborough University, Leicestershire, LE11 3TU, UK

SOURCE: International Journal of Hydrogen Energy (2001),

26(7), 763-775

CODEN: IJHEDX; ISSN: 0360-3199

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Loughborough University have designed, constructed and evaluated a compact CO preferential oxidation (PROX) reactor for polymer electrolyte membrane (PEM) fuel cell applications. The reactor design is based upon the catalyst coating of high surface area heat transfer technol. Catalyst screening studies have revealed a mixed transition metal oxide promoted platinum-ruthenium formulation to be suitable for the particular reactor application i.e. acceptable CO oxidation activity and selectivity within a temperature range of 130-200°C. The CO PROX reactor design has been sized for 20 kWe PEM fuel cell applications, and is based upon 2+2 1 catalyst washcoated compact fin heat exchangers. The PROX reactor has being successfully integrated and

commissioned with a methanol steam reformer with redns. in fuel CO concns. of 2.7% to <20 ppm being subsequently demonstrated.

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 27 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:275788 CAPLUS

DOCUMENT NUMBER: 132:310755

TITLE: Development of MoxRuySez(CO)_n electrocatalysts by screen printing and sintering for fuel cell applications

AUTHOR(S): Sebastian, P. J.; Rodriguez, F. J.

CORPORATE SOURCE: Energy Research Centre, UNAM, Morelos, 62580, Mex.

SOURCE: Surface Engineering (2000), 16(1), 43-46

CODEN: SUENET; ISSN: 0267-0844

PUBLISHER: IOM Communications Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Electrocatalysts based on molybdenum, ruthenium, and selenium were prepared by screen printing Ru₃(CO)₁₂ + Se and Ru₃(CO)₁₂ + Mo(CO)₆ + Se mixts. and subsequent sintering at 250° in air or Se atmospheric in a tubular furnace. The catalysts were characterized using techniques such as XRD, SEM, TEM, voltammetry, and polarization (current-potential) measurements. The results indicate that screen printed RuxSey(CO)_n and MoxRuySez(CO)_n are near amorphous in nature and possess appreciable catalytic activity for the oxygen reduction reaction in a polymer electrolyte (Nafton membrane) fuel cell. The electrocatalytic activity seems to diminish with selenium incorporation in the lattice of the carbonyl clusters formed during synthesis.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 28 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:622346 CAPLUS

DOCUMENT NUMBER: 131:222718

TITLE: Mass spectrometers and methods for rapid screening of libraries of different materials

INVENTOR(S): Weinberg, W. Henry; McFarland, Eric W.; Cong, Peijun; Guan, Shenheng

PATENT ASSIGNEE(S): Symyx Technologies, USA

SOURCE: U.S., 26 pp., Cont.-in-part of U.S. Ser. No. 898,715.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 38

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5959297	A	19990928	US 1997-946730	19971008
US 6030917	A	20000229	US 1997-898715	19970722
JP 2002241319	A2	20020828	JP 2001-378679	19970722
JP 2002241387	A2	20020828	JP 2001-378680	19970722
JP 2002241388	A2	20020828	JP 2001-378681	19970722
EP 1669738	A2	20060614	EP 2006-4658	19971007
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, AL				
EP 1280185	A1	20030129	EP 2002-18112	19971008
EP 1280185	B1	20040922		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 2001033375	A1	20011025	US 2001-874758	20010605

AU 766682	B2	20031023	AU 2002-27470	20020320
AU 766740	B2	20031023	AU 2002-27471	20020320
US 2003100119	A1	20030529	US 2002-269362	20021011
US 2005009081	A1	20050113	US 2004-913569	20040806
PRIORITY APPLN. INFO.:				
			US 1996-28106P	P 19961009
			US 1996-29255P	P 19961025
			US 1997-35366P	P 19970110
			US 1997-50949P	P 19970613
			US 1997-898715	A2 19970722
			US 1994-327513	A3 19941018
			US 1996-16102P	P 19960723
			US 1996-28105P	P 19961009
			US 1997-35202P	P 19970110
			US 1997-48987P	P 19970609
			US 1997-50949	A 19970613
			JP 1998-507246	A3 19970722
			EP 1997-910844	A3 19971007
			EP 1997-910017	A3 19971008
			US 1997-947085	A1 19971008
			US 1998-127660	A2 19980731
			US 1999-337047	B1 19990621
			AU 1999-59439	A3 19991116
			US 1999-474344	A3 19991229
			US 2001-874758	A3 20010605
			US 2002-153029	A1 20020521

AB Methods and apparatus for screening diverse arrays of materials are provided. Techniques are provided for rapidly characterizing compds. in combinatorial arrays of materials for discovering and/or optimizing new materials with specific desired properties. A scanning mass spectrometer is used which includes an ionization chamber and a collector that outputs an elec. signal responsive to the quantity of gas ions contacting the collector surface. A conduit system selectively withdraws samples from the array of materials, passing the samples into the ionization chamber. In a specific embodiment, reactants are passed through the conduit system to the selected regions of interest on the substrate.

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 29 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:600283 CAPLUS
 DOCUMENT NUMBER: 132:196054
 TITLE: Titanium modified UTD-1 as a catalyst for oxidation reactions
 AUTHOR(S): Balkus, Kenneth J., Jr.; Khanmamedova, Alla K.; Scott, Ashley; Hoefelmeyer, James
 CORPORATE SOURCE: Department of Chemistry, University of Texas at Dallas, Richardson, TX, 75083-0688, USA
 SOURCE: Proceedings of the International Zeolite Conference, 12th, Baltimore, July 5-10, 1998 (1999), Meeting Date 1998, Volume 2, 1403-1408. Editor(s): Treacy, M. M. J. Materials Research Society: Warrendale, Pa.
 CODEN: 68DCAH

DOCUMENT TYPE: Conference

LANGUAGE: English

AB Titanium was incorporated in UTD-1 by direct synthesis or by grafting to the surface of an all silica zeolite. The catalysts were screened for activity in oxidation of alkanes, alkenes, phenols and bulkier substrates, such as 2,6-di-tert-butylphenol and stilbene, using H₂O₂ as well as tert-Bu hydroperoxide. The Ti-UTD-1 also was fabricated to a membrane and evaluated for the oxidation of cyclohexene in a pervaporation experiment

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 30 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1998:239369 CAPLUS
 DOCUMENT NUMBER: 128:289491
 TITLE: Mass spectrometers and methods for rapid screening of
 libraries of different materials
 INVENTOR(S): Weinberg, W. Henry; McFarland, Eric W.; Cong, Peijun;
 Guan, Shenheng
 PATENT ASSIGNEE(S): Symyx Technologies, USA
 SOURCE: PCT Int. Appl., 66 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 38
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9815969	A2	19980416	WO 1997-US18147	19971008
WO 9815969	A3	20000727		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 6030917	A	20000229	US 1997-898715	19970722
JP 2002241319	A2	20020828	JP 2001-378679	19970722
JP 2002241387	A2	20020828	JP 2001-378680	19970722
JP 2002241388	A2	20020828	JP 2001-378681	19970722
AT 319988	E	20060315	AT 1997-910844	19971007
EP 1669738	A2	20060614	EP 2006-4658	19971007
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, AL				
CA 2267908	AA	19980416	CA 1997-2267908	19971008
CA 2267908	C	20020709		
AU 9747493	A1	19980505	AU 1997-47493	19971008
EP 1019947	A2	20000719	EP 1997-910017	19971008
EP 1019947	B1	20020814		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
AT 222401	E	20020815	AT 1997-910017	19971008
EP 1280185	A1	20030129	EP 2002-18112	19971008
EP 1280185	B1	20040922		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
ES 2182040	T3	20030301	ES 1997-910017	19971008
AT 277422	E	20041015	AT 2002-18112	19971008
US 2001033375	A1	20011025	US 2001-874758	20010605
AU 766682	B2	20031023	AU 2002-27470	20020320
AU 766740	B2	20031023	AU 2002-27471	20020320
US 2003100119	A1	20030529	US 2002-269362	20021011
US 2005009081	A1	20050113	US 2004-913569	20040806
PRIORITY APPLN. INFO.:			US 1996-28105P	P 19961009
			US 1996-28106P	P 19961009
			US 1996-29255P	P 19961025
			US 1997-35202P	P 19970110
			US 1997-35366P	P 19970110
			US 1997-48987P	P 19970609

US 1997-50949P	P 19970613
US 1997-898715	A 19970722
US 1994-327513	A3 19941018
US 1996-16102P	P 19960723
US 1997-50949	A 19970613
JP 1998-507246	A3 19970722
EP 1997-910844	A3 19971007
EP 1997-910017	A3 19971008
US 1997-947085	A1 19971008
WO 1997-US18147	W 19971008
US 1998-127660	A2 19980731
US 1999-337047	B1 19990621
AU 1999-59439	A3 19991116
US 1999-474344	A3 19991229
US 2001-874758	A3 20010605
US 2002-153029	A1 20020521

AB Methods and apparatus for screening diverse arrays of materials are provided. In particular, techniques are provided for rapidly characterizing compds. in combinatorial arrays of materials for discovering and/or optimizing new materials with specific desired properties. According to one aspect, a scanning mass spectrometer is used which includes an ionization chamber and a collector that outputs an elec. signal responsive to the quantity of gas ions contacting the collector surface. A conduit system selectively withdraws samples from the array of materials, passing the samples into the ionization chamber. In a specific embodiment, reactants are passed through the conduit system to the selected regions of interest on the substrate. Means are provided to selectively heat regions on the substrate.

L20 ANSWER 31 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:154546 CAPLUS
 DOCUMENT NUMBER: 128:194716
 TITLE: Manufacture of solid polymer electrolyte fuel cells
 INVENTOR(S): Nagayama, Kazuhiko
 PATENT ASSIGNEE(S): Fuji Electric Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10064574	A2	19980306	JP 1996-223560	19960826
PRIORITY APPLN. INFO.:			JP 1996-223560	19960826
AB	The fuel cells are prepared by transferring a catalyst layer from a film on a solid ion exchanger electrolyte membrane to form a catalyst-electrolyte laminate. The catalyst layer is formed by screen printing on the film and transferred to the electrolyte membrane by hot pressing.			

L20 ANSWER 32 OF 42 INSPEC (C) 2006 IET on STN

ACCESSION NUMBER: 1998:6087477 INSPEC
 DOCUMENT NUMBER: A1999-01-8630G-004; B1999-01-8410G-005
 TITLE: A novel process to fabricate membrane electrode assemblies for proton exchange membrane fuel cells
 AUTHOR: Kim, C.S.; Chun, Y.G.; Peck, D.H.; Shin, D.R. (Korea Inst. of Energy Res., Taejon, South Korea)
 SOURCE: International Journal of Hydrogen Energy (Nov. 1998), vol.23, no.11, p. 1045-8, 6 refs.

CODEN: IJHEDX, ISSN: 0360-3199
SICI: 0360-3199(199811)23:11L.1045:NPFM;1-9
Price: 0360-3199/98/\$19.00+0.00
Published by: Elsevier, UK

DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: United Kingdom
LANGUAGE: English
AN 1998:6087477 INSPEC DN A1999-01-8630G-004; B1999-01-8410G-005
AB A new fabrication method of membrane electrode assembly (MEA) for proton exchange membrane fuel cells is developed by using perfluorosulfonyl fluoride copolymer powder and Pt/C catalyst. The perfluorosulfonyl fluoride copolymer powder is pressed into a sheet at 230°C by hot pressing. The Pt/C catalyst is then coated on to either side of the sheet by screen printing, followed by hot pressing. During this process, due to the melt-fabricable property of the pre-formed sheet, the coated catalyst layer is embedded into the membrane. The resultant MEA is converted into perfluorosulfonate polymer by hydrolysis of NaOH solution. The thermal property of the copolymer powder has been analyzed by DTA-TGA, and the interfacial contact of the catalyst with the membrane has been also investigated by SEM. The performance characteristics of the MEA have been evaluated in a single cell

L20 ANSWER 33 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:390620 CAPLUS
DOCUMENT NUMBER: 133:76572
TITLE: Catalyst screening for hydrogen production in mobile systems by the partial oxidation of methanol or hydrocarbons
AUTHOR(S): Newson, E.; Uenala, E.; Geissler, K.; Hottinger, P.; Truong, T. B.; Von Roth, F.
CORPORATE SOURCE: Paul Scherrer Institute, Villigen, 5232, Switz.
SOURCE: Hydrogen Energy Progress XII, Proceedings of the World Hydrogen Energy Conference, 12th, Buenos Aires, June 21-26, 1998 (1998), Volume 2, 953-961. Editor(s): Bolcich, Juan Carlos; Veziroglu, T. Nejat. Asociacion Argentina del Hidrogeno: Buenos Aires, Argent.
CODEN: 69CKA9
DOCUMENT TYPE: Conference
LANGUAGE: English
AB Several methods of H₂ supply for mobile fuel cell systems are being evaluated worldwide. For reasons based on full fuel cycle efficiency, available gasoline infrastructure and reaction exothermicity (fast startup), the partial oxidation (POX) of methanol or hydrocarbons to H₂ and carbon dioxide is of potential interest. The results of catalyst screening for methanol POX have shown significant conversions (80-99%) and H₂ yields (40-65%) but with hot spots of 50-150°C and CO levels of 2%. The H₂ rates are equivalent to 20-45 kWth/L reactor volume depending on reaction parameters. In contrast, initial results from hydrocarbon (toluene) POX are dominated by total oxidation giving high conversions (85-95%) but low yields (10-20%) of H₂. More screening is required for toluene POX and dynamic expts. with stability tests for the methanol route. Palladium-silver foil membranes were tested to reduce the CO content in H₂, but a CO slip of 40 ppm and low permeation rates, 2 W/cm², make this option uneconomic with this module design.
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 34 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:714614 CAPLUS
DOCUMENT NUMBER: 130:27169

TITLE: Performance modeling in a lightweight fuel cell stack
AUTHOR(S): Polevaya, O.; Bloomfield, D.
CORPORATE SOURCE: USA
SOURCE: Proceedings of the Power Sources Conference (1998),
38th, 416-419
CODEN: PPOCFD
PUBLISHER: National Technical Information Service
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A performance model of a lightwt. fuel cell stack, utilizing a strip cell conduction design is presented. In the strip design an expanded metal current collector screen is impressed into a proton exchange membrane. The current collector/membrane assembly is catalyzed on both sides. The cells are heat bonded together, the anode of one cell extending to form the cathode of the next cell. The resulting planar strip of cells is capable of producing a high voltage in a small volume. Planar strip cells are stacked to obtain high power levels and high voltages. The reactants are separated by pseudo-bipolar plates which are fabricated from thin plastic sheets. Strip cell electron flow is restricted to the cell plane, as opposed to conventional bipolar cells where current flow is perpendicular to the cell plane. Current generation in the catalyst and transmission in the current collector is quite complex. The strip cell surface is not equipotential. The electrons formed in the catalyst are forced to move in the catalyst plane towards the current collector screen. Catalyst layer electronic conductivity is very important. Swelling of the proton exchange membrane coupled with low catalyst compression can result in cracks between the catalyzed membrane and the current collector screen, thus impeding current collection. Our present understanding of the cell is based on performance modeling and exptl. resistance measurements. We have used current interrupter, a.c. impedance and electrochem. compression methods to obtain cell resistance. We have also modeled the water transport in the cell. Water management affects the resistance of the membrane and, through membrane swelling, catalyst layer structural stability. The goal performance is 0.7 V at 40 mA/cm². We have determined that the way to reach this goal is to improve the catalyst/membrane/current collector interface.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 35 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1998:216367 CAPLUS
DOCUMENT NUMBER: 129:46606
TITLE: A rapid half-cell technique for the pre-screening of polymer fuel cell catalysts
AUTHOR(S): TamizhMani, G.; Dodelet, J. P.; Guay, D.; Dignard-Bailey, L.
CORPORATE SOURCE: Natural Resources Canada, CANMET-Energy
Diversification Research Laboratory, Varennes, QC, J3X 1S6, Can.
SOURCE: Journal of Electroanalytical Chemistry (1998), 444(1), 121-125
CODEN: JECHE; ISSN: 0368-1874
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Four platinum-based catalysts with different catalytic activity for the oxygen reduction reaction were prepared and tested in polymer fuel cells (PFCs) and in half-cells with H₂SO₄ and HF electrolytes. The activity results of PFCs at 0.9 V vs. RHE (reversible hydrogen electrode) can be mimicked in parallel by the results obtained in HF electrolyte but not by the results obtained in H₂SO₄ electrolyte. This paper concludes that the

pre-screening of a huge number of Pt-based catalysts for the selection of potential catalysts for the PFCs can be carried out by a rapid half-cell technique with a nonadsorbing electrolyte such as HF.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 36 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:57188 CAPLUS

DOCUMENT NUMBER: 128:160237

TITLE: A new method for electrochemical screening based on the rotating ring disk electrode and its application to oxygen reduction catalysts

AUTHOR(S): Claude, E.; Addou, T.; Latour, J.-M.; Aldebert, P.

CORPORATE SOURCE: Commissariat l'Energie Atomique, Departement Recherche Fondamentale Maiere Condensee, SI3M/PCM*SCIB/CC, grenoble, 38054, Fr.

SOURCE: Journal of Applied Electrochemistry (1998), 28(1), 57-64

CODEN: JAELBJ; ISSN: 0021-891X

PUBLISHER: Chapman & Hall

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new method for electrochem. characterization of composite electrode materials is reported. A paste of the catalytic material in Nafion is coated on a rotating ring disk electrode (RRDE) to partially simulate the working environment of a proton exchange membrane

(PEM)/electrode composite as used in, for example, water electrolysis or PEM fuel cell operation. This allows direct comparison of a wide range of candidate electrocatalysts in a reproducible manner. Problems specific to these volumic electrodes are accommodated satisfactorily by rational modification of the standard expressions used in RRDE anal. The value of the method is illustrated in studies of various cobalt complexes which show promise in dioxygen reduction; namely, cobalt tetramethoxyphenylporphyrin (CoTMPP), cobalt phthalocyanine (CoPC), and cobalt cyclam (CoCy), supported on a range of particulate carbons BP2000, Printex XE 2 and Vulcan XC-72. Typical electrochem. parameters have been measured or estimated, including half-wave potentials (E1/2), Tafel slopes (b), 'activation currents' (Ia) and the average number of electrons transferred (n). The nature of the complex itself and the carbon support have a strong influence on electrode behavior. Ligands with more aromatic character give better performance. Dramatic improvements in performance result from heat pretreatment, which is tentatively attributed to the formation of dimeric cobalt species via thermally-induced aggregation. In terms of the four electron reduction (to water), the best result was obtained for CoTMPP on Printex XE2 and rationalized on the basis of popular current views on the mechanism and catalyst functionality. CoPC on BP2000 is unusual in showing a strong change in n with reduction potential. Product selectivity ranges between mainly hydrogen peroxide (n = 2) and water (n = 4) with increasing overpotential.

REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 37 OF 42 INSPEC (C) 2006 IET on STN

ACCESSION NUMBER: 1997:5704369 INSPEC

DOCUMENT NUMBER: A1997-21-8630G-006; B1997-11-8410G-006

TITLE: PEM fuel cell stack development based on membrane-electrode assemblies of ultra-low platinum loadings

AUTHOR: Zawodzinski, C.; Wilson, M.S.; Gottesfeld, S. (Div. of Mater. Sci. & Technol., Los Alamos Nat. Lab., NM, USA)

SOURCE: Proceedings fo the First International Symposium on Proton Conducting Membrane Fuel Cells 1, 1995, p.

57-65 of vi+318 pp., 10 refs.
Editor(s): Gottesfeld, S.; Halpert, G.; Landgrebe, A.
Published by: Electrochem. Soc, Pennington, NJ, USA
Conference: Proceeding of the First International
Symposium on Proton Conducting Membrane Fuel Cells 1,
Chicago, IL, USA, 8 Oct. 1995

DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Experimental
COUNTRY: United States
LANGUAGE: English

AN 1997:5704369 INSPEC DN A1997-21-8630G-006; B1997-11-8410G-006
AB We are attempting to scale-up our single cell technology, based on
ultra-low platinum loadings, to develop a polymer electrolyte
membrane (PEM) fuel cell stack for stationary power generation.
We describe initial work on scale-up to a manifolded single cell based on
a 100 cm² active area, with the intention of combining multiples of such
cells to create stacks. The cells, which are fed by pressurized H₂ and
air, utilize membranes catalyzed by ultra-low platinum loadings
(0.14 mg Pt/cm²) and metal serpentine channel or screen flow-fields to
minimize costs, while maintaining desirable power density. We describe
some initial promising results from testing of stainless steel screens as
flow-fields in such cells, achieving 0.5 W/cm² under mild flow and
pressurization conditions

L20 ANSWER 38 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1986:98162 CAPLUS
DOCUMENT NUMBER: 104:98162
TITLE: Electrolytic cells with horizontally arranged
electrodes
INVENTOR(S): Staab, Rudolf
PATENT ASSIGNEE(S): Hoechst A.-G., Fed. Rep. Ger.
SOURCE: Ger. Offen., 7 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3425862	A1	19860123	DE 1984-3425862	19840713
CA 1254532	A1	19890523	CA 1985-485474	19850627
EP 170092	A1	19860205	EP 1985-108265	19850704
EP 170092	B1	19880831		
R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE				
AT 36875	E	19880915	AT 1985-108265	19850704
IN 164954	A	19890715	IN 1985-MA516	19850708
FI 8502746	A	19860114	FI 1985-2746	19850711
FI 76837	B	19880831		
FI 76837	C	19881212		
US 4615763	A	19861007	US 1985-753915	19850711
NO 8502813	A	19860114	NO 1985-2813	19850712
NO 163786	B	19900409		
NO 163786	C	19900718		
AU 8544875	A1	19860116	AU 1985-44875	19850712
AU 573356	B2	19880602		
ZA 8505260	A	19860326	ZA 1985-5260	19850712
PRIORITY APPLN. INFO.:			DE 1984-3425862	A 19840713
			EP 1985-108265	A 19850704

AB The cells are designed for the production of Cl via the membrane
technol. The height-adjustable anodes of Ti or graphite are arranged on
the cell cover and the gas-diffusion cathode is placed on a screen or

grating with supporting feet on the bottom of the cell. Between the gas diffusion cathode and the membrane is a spacer. The gas-diffusion cathode has an electrochem. active catalyst on a screen or expanded metal and uses an O-containing gas or air.

L20 ANSWER 39 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1983:455472 CAPLUS
 DOCUMENT NUMBER: 99:55472
 TITLE: Contact apparatus for oxidizing sulfur dioxide
 INVENTOR(S): Yavor, V. I.; Ivanova, I. D.; Bukin, V. V.; Aleksandrova, L. P.
 PATENT ASSIGNEE(S): State Scientific-Research Institute of Nonferrous Metals, USSR
 SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1983, (14), 32.
 CODEN: URXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Russian
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 1011229	A1	19830415	SU 1982-3384417	19820127
PRIORITY APPLN. INFO.:			SU 1982-3384417	19820127
AB	The apparatus for contact oxidation of SO ₂ consists of a vertical housing with inlet and outlet tubes for gas, a central column with vertical grids fixed inside the casing, a catalyst bed, and spherical separating screens arranged between them. The amt of metal used is reduced by reducing the dimensions of the apparatus by providing opening in the spherical membranes in which for mixing purposes, are fitted gas inlet tubes. Gas outlet tubes are installed coaxially above the spherical membranes.			

L20 ANSWER 40 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1981:451801 CAPLUS
 DOCUMENT NUMBER: 95:51801
 TITLE: Cell for electrolysis of brines for producing chlorine
 INVENTOR(S): Dubois, Donald Wayne; Darlington, William Bruce
 PATENT ASSIGNEE(S): PPG Industries, Inc. , USA
 SOURCE: Ger. Offen., 32 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3041844	A1	19810527	DE 1980-3041844	19801106
DE 3041844	C2	19870319		
US 4342629	A	19820803	US 1979-76898	19791108
US 4315805	A	19820216	US 1980-120217	19800211
NL 8005092	A	19810601	NL 1980-5092	19800910
SE 8006868	A	19810509	SE 1980-6868	19801001
NO 8002980	A	19810511	NO 1980-2980	19801007
JP 56075585	A2	19810622	JP 1980-154736	19801105
JP 56112490	A2	19810904	JP 1980-154737	19801105
FR 2469473	A1	19810522	FR 1980-23765	19801106
FR 2469473	B1	19851025		
BE 886072	A1	19810507	BE 1980-202727	19801107
GB 2063918	A	19810610	GB 1980-35988	19801110

US 4364815	A	19821221	US 1981-276123	19810622
US 4448662	A	19840515	US 1983-496031	19830519
CA 1207277	A2	19860708	CA 1985-475357	19850227
PRIORITY APPLN. INFO.:				
			US 1979-76898	A 19791108
			US 1980-120217	A 19800211
			CA 1980-362980	A3 19801022
			US 1982-382450	A1 19820524

AB In this cell a permionic membrane seps. the anode from the cathode. A chlor-alkali cell with a solid polymer electrolyte was constructed with a thermoplastic permionic membrane having attached on opposite sides anodic and cathodic catalysts which were on screens. The solid polymer electrolyte was made by deposition of Pt black on a foil of Flemion, a perfluorinated hydrocarbon resin with Me ester acid groups. After pressing the polymer was boiled in 30% NaOH solution for 24 h. This membrane was used with a Ni-plated stainless steel screen cathode and a RuO₂-TiO₂ coated screen as the anodic catalyst carrier on the uncoated surface of the membrane. Brine was electrolyzed at 3.03 V for 50 min.

L20 ANSWER 41 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1966:444793 CAPLUS
 DOCUMENT NUMBER: 65:44793
 ORIGINAL REFERENCE NO.: 65:8325g-h
 TITLE: An alkaline methanol-air primary battery system
 AUTHOR(S): Biddick, R. E.; Douglas, D. L.
 CORPORATE SOURCE: Res. & Develop. Lab., Gould-Natl. Batteries, Inc., Minneapolis, MN
 SOURCE: Hydrocarbon Fuel Cell Technol., Symp., Am. Chem. Soc., Atlantic City (1965) 131-41
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB A fuel battery system was proposed to operate signaling devices. The anodes were standard sintered-Ni battery plates contg, a deposited Pd catalyst. The cathodes contained a Ag catalyst bonded to a Ni screen by Teflon. The electrodes were 0.25 ft.2 in area and were separated by a semipermeable membrane such as Permion 300 or by asbestos. The battery contained 24 cells with 5M MeOH + 6M KOH, was equipped with automatic controls, and connected in parallel with a 12 amp. hr., 12 v. sealed Ni-Cd battery. Maximum fuel utilization was 55 w. hrs./lb., the oxidn, proceeding mainly to carbonate. At an ambient temperature of 75°F., the battery temperature reached 60-5°C. at c.ds. of 10-20 m.a/cm.2 and at 0.4-0.5 v./cell. Single cells were tested for periods up to 1 year at room temperature and 10 ma./cm.2, batteries for up to 2000 hrs.

L20 ANSWER 42 OF 42 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1961:116883 CAPLUS
 DOCUMENT NUMBER: 55:116883
 ORIGINAL REFERENCE NO.: 55:21919d-f
 TITLE: Fuel cell for producing electrical energy by direct reaction of gaseous fuels with oxidizing gases
 INVENTOR(S): Vielstich, Wolf; Gruneberg, Gerhard; Spengler, Herbert
 PATENT ASSIGNEE(S): Ruhrchemie Akt.-Ges.; Steinkohlen-Elektrizitat Akt.-Ges.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1086768	-----	19600811	DE 1959-R25778	19590620

US 3253956

19660531

US 1960-36050

19600614

AB A fuel cell is described that employs as electrodes for both the fuel gas and oxidizing gas layers of granular or powdered catalyst confined by an elec. conducting screen or net, provided with a power supply. The electrodes of granular catalysts for the fuel gas and oxidizing gas, resp., are brought into contact with the electrolyte, a membrane of solid ion-exchange material that seps. the compartments of the cell.